Montana Trauma

Systems Plan

February 1994

Executive Summary

Trauma is the leading cause of death and disability in children and young adults in America and is the third leading cause of death for persons of all ages. Trauma has long been a public health problem throughout the nation. As early as 1966, the National Academy of Sciences characterized trauma as **THE NEGLECTED DISEASE OF MODERN SOCIETY.**

Death from injury in Montana (72 per 100,000 population) is 31 percent higher than the national norm (55 deaths per 100,000 population). Not only is injury the leading cause of death for Montanans less than 44 years of age, trauma causes more years of life lost than all other causes of death combined. Most of these deaths are males in the most productive years of their life. Greater than 50% of the deaths among our young people are the result of motor vehicle crashes. In 1991, there were 200 fatalities and 8,400 injuries in Montana from motor vehicle crashes resulting in an estimated economic loss of $238 million.

The trauma problem among the native American population (comprising about 65% of Montana's population) is even more significant. Injury is the second leading cause of death, overall, for this population.

Using an expert panel methodology to retrospectively review all trauma deaths in two large areas of Montana, the Critical Illness and Trauma Foundation of Big Timber, Montana, recently reported that 17% of all trauma deaths were potentially preventable. In the prehospital setting potentially preventable death rate was reported as 7.7% with the rate for patients arriving at the hospital alive being 33%. This study analyzed only medical care, but did not evaluate the impact of injury prevention programs, highway call boxes, incident locator devices or other programs designed to prevent injury or reduce the amount of time from injury to definitive care.

Although organized systems of trauma care are well demonstrated to reduce the number of potentially preventable trauma deaths, to lessen disability and to provide an earlier return of patients to society, Montana does not have a statewide trauma system. Ultimately, an organized statewide trauma system would decrease the cost of healthcare and increase productivity and spending which would otherwise be lost.

Recognizing that Montana's trauma death rate is a significant public health issue, the Montana Department of Public Health and Human Services, with the cooperation of a multidisciplinary Trauma System Task Force, has been designated a statewide, inclusive system of trauma care. Federal grant funding from the Division of Trauma and Emergency Medical Systems allowed the use of a consultant to facilitate the plan development.

MONTANA TRAUMA SYSTEM PLAN - OVERVIEW

The Montana trauma system is a voluntary system designed to provide an organized, pre-planned response to the trauma patient helping to assure both optimal patient care (prehospital, in-hospital and rehabilitation) and the most efficient use of limited health care resources. It is designed to provide a supporting system for the physician's care of the trauma patient, but does not mandate patient care nor transfer patterns. Because it is regionally designed and quality-improvement driven, it facilitates system improvements based on good data.

The Montana Trauma System plan is ***inclusive***. Rather than suggesting that all trauma patients must receive their care in a few urban hospitals, the utilization of rural facilities is strongly emphasized. In rural Montana, the patient's survival frequently depends on the appropriate use of rural medical facilities and providers. In this plan, every hospital and medical assistance facility is expected to be a part of the system. The matching of the appropriate facility with the needs of the injured patients is the "backbone" of this plan and will assure every patient receives optimal care from the initial recognition of injury through rehabilitation. Facility standards, based on national criteria, but tailored to Montana, provide guidance to facilities in organizing their trauma response at the level of system participation they choose. Each facility is expected to serve as a focal point for trauma care in their catchment area and to form an interdisciplinary trauma committee including representation from prehospital emergency medical services. Each facility will have a representative on the **Regional Trauma Advisory Committee (RTAC).**

The Montana Trauma System plan proposes a ***regional*** trauma delivery system centered around Regional Trauma Centers and based on existing trauma patient flow patterns. RTACs, composed of representatives of each participating medical facility, will constantly evaluate and improve the system (with data and legal discoverability protections provided by law) based upon trauma register data and continuous quality improvement.

The prehospital EMS delivery system and interfacility transportation system are integral components of the trauma plan. Prehospital provider recognition of the major trauma patient will allow early notification of their local facility to assure trauma team activation. For patients likely to require transportation to a different trauma facility, this notification will also allow early coordination and dispatch of interfacility transportation via a ***Central Medical Resource Dispatch*** in each of the regions. The referring physician should only have one phone call to assure all aspects of interfacility transport are expeditiously arranged.

To assure a coordinated, statewide approach, a **State Trauma Advisory Committee (STAC)** will provide overall trauma system coordination among the RTACs and help to establish statewide standards for trauma care. They will have representation on a State Emergency Medical Services Advisory Council as well. The Montana Department of Public Health and Human Services (through its Emergency Medical Services and Injury Prevention

Section) will have statutory authority for trauma system development and management.

A dedicated funding source (to be proposed to the legislature) will provide finances to operate the Montana trauma system and provide limited grant-in-aid, on a matching funds basis, to local areas to assist with trauma system and EMS system improvements.

MONTANA TRAUMA SYSTEM PLAN - COMPONENTS

I. ADMINISTRATION AND ORGANIZATION

The Montana Trauma System will be administered by the Montana Department of Public Health and Human Services through its Emergency Medical Services and Injury Prevention Section. As a facility-driven system, each participating hospital and medical assistance facility will be generally responsible for trauma care delivery in their catchment area and will establish a multidisciplinary trauma committee to coordinate and review trauma care.

A representative of each facility's trauma committee will serve on a Regional Trauma Advisory Committee. Regional Trauma Advisory Committees will provide a forum for planning regional trauma systems, developing regional system standards, assisting with patient triage and transfer protocols, reviewing the system performance with quality improvement data and for conducting public information and education activities.

Regional Trauma Centers will serve as the "hub" of each region and will be responsible for organizing the RTACs. RTACs will assure a regional approach to the delivery of trauma care with continuous system evaluation based upon quality improvement and trauma register data. A regionalized approach, reflecting existing patient transfer patterns, will assure adequate coverage. Based on the expected locations of the Regional Trauma Center, it is anticipated there will be three regions with hubs in Billings, Great Falls and Missoula.

The State Trauma Advisory Committee (STAC) will have a representative from each RTAC and various appropriate Montana professional organizations. To assure coordination with the overall EMS system, the STAC will also have representation on the State EMS Advisory Council.

The plan recommends the presentation of trauma system authorizing legislation to the 1995 Montana Legislature. This legislation would include legal protections for the quality improvement process and protection from anti-trust violation. The plan recommends a dedicated funding source (moving traffic violations or motor vehicle registration) to support trauma system development and to provide a grant-in-aid program (on a matching funds basis) to assist local areas (hospitals and EMS

providers) to meet trauma system standards and to improve their EMS system.

II. OPERATIONAL/CLINICAL COMPONENTS

Trauma prevention is emphasized for all trauma system participants including prehospital care providers, trauma facilities, the Regional Trauma Advisory Committees, and the State Trauma Advisory Committees. Emphasis is placed on State level trauma prevention coordination.

The plan recommends training of prehospital care providers in initial trauma care. Prehospital care providers who are well educated in the recognition of the major trauma patient will allow early activation of the local trauma team and early activation, when appropriate, of interfacility transportation.

Medical direction is emphasized for all levels of EMS providers including basic life support services. Trauma hospitals are encouraged to facilitate the provision of medical control throughout their catchment area. Triage protocols will allow for early activation of interfacility transportation and, in some very limited instances, will guide the destination of the patient to the appropriate facility. In most instances, ground EMS units will continue to take injured patients to the nearest medical facility.

A Central Medical Dispatch, in each region, will provide a coordinated, single telephone number for dispatch of advanced life support units (air and ground) for inter-facility transport. Outlying facilities will be able to call the phone number, within their region, to summon interfacility transportation. With adequate training of prehospital care providers, early activation of this system will be encouraged.

III. EVALUATION

Quality improvement, via the Montana Trauma Register, is essential at every level of EMS provider, trauma facility, RTAC and STAC. The entire trauma system is data-driven and quality improved based. Statewide adoption of the Montana Trauma Register will allow comparison on a national level for outcome data. RTACs will be actively involved, with continuous evaluation and improvement of the regional trauma system.

IV. DEFINITIVE CARE/FACILITY STANDARDS

Medical facilities are the backbone of the entire trauma system plan. In an inclusive trauma system, all hospitals and medical assistance facilities are expected (but not mandated) to participate. This plan proposes trauma facility standards which are attainable and realistic, yet are in compliance with national recommendations.

Regional Trauma Centers have the medical staff and facilities to provide advanced trauma care to patients throughout their region. They are the hub of the region and are responsible for organizing the Regional Trauma Advisory Committees.

Area Trauma Hospitals have the facilities and surgical capabilities to provide care for a majority of injured patients in their normal patient catchment area. They may serve as a referral center for Community Trauma Hospitals and Trauma Receiving Facilities. Most notably absent from their medical staff roster is neurosurgical coverage.

Community Trauma Hospitals are typically hospitals that do not have 24 hour/day coverage of their emergency departments and only have one surgeon on staff. With these exceptions, these facilities are similar to Area Trauma Hospitals and may serve as referral centers for Trauma Receiving Facilities.

Trauma Receiving Facilities range from hospitals with no surgical coverage to Medical Assistance Facilities. These facilities will provide initial resuscitation and transfer critically injured patients to a higher level trauma facility

The plan recommends that patients be repatriated to their local hospital as soon as it is medically appropriate.

Problem Statement

Currently, there is no statewide system of trauma care in Montana. Developing a statewide Montana Trauma System Plan presents several challenges. Approximately one-third of Montana's population is located in its seven major cities. The remainder of the citizens are widely dispersed, living in 471 communities and on farms and ranches. Montana is largely a frontier state consisting of rugged mountains in the western one-third, and plains in the eastern two-thirds. Montana ranks second in sparseness only to Alaska, with more than 147,000 square miles and a 1990 census of 799,065. This low population density (5.5 persons per square mile) poses special problems with often extensive time delays from the injury occurrence to discovery.

Trauma literature supports the importance of the "Golden Hour," that time from injury occurrence to definitive surgical care after which the body begins an irreversible physiological decline resulting in death. Trauma systems are a component of a good emergency medical services system and are designed to help assure the shortest possible time interval from injury occurrence to definitive surgical care.

In Montana, assuring definitive surgical care within the "Golden Hour" is extremely problematic. In many instances, there is a significant delay between the time of the injury and EMS system activation. The delayed detection time, combined with long transport distances, difficult terrain, a limited number of prehospital care providers and a sparsity of hospitals, pose special problems in planning the delivery of emergency medical and trauma care.

The American Indian is Montana's largest minority group, constituting 5.9% of the population. Most live on seven reservations with smaller groups living off the reservation in urban settings. The Billings Area Indian Health Service provides comprehensive health care services to American Indians from fourteen tribes on seven Indian reservations. The Billings Area Indian Health Service includes three hospitals, seven health facilities and three satellite health stations. The hospitals and four of the health facilities are accredited by the Joint Commission on Accreditation of Health Organizations.

The trauma problem among the Native American population is significant. The trauma death rate for American Indians reported by the Billings Indian Health Service area office for 1988 was among the highest in the nation exceeding 200 deaths per 100,000 population. Injury is the second leading cause of death, overall, for American Indians in the health service area. Deaths from injury in the American Indian population from 1992 breakdown as follows: motor vehicle crashes constitute 43%, homicides 13%, suicides 14% and other causes 18%. Most of the injuries were in the age range of 15-24 years. The Billings Indian Health Service area office had the third highest overall unintentional injury death rate (138 deaths/100,000 population, compared to 34.6/100,000 for the nation) and the third highest death rate from

motor vehicle accidents (50.8/100,000 population vs. 19.5/100,000 for the nation) of all Indian Health Service (IHS) area offices. In addition to the unintentional injuries, they also had the third highest death rate from suicide (30.4/100,000 population vs. 11.7/100,000 for the general population). Injuries and poisonings were the third leading cause of hospitalizations (13.8% vs. 10.9% for all IHS areas).

There are 52 licensed hospitals in the State of Montana of which 39 have fewer than 50 beds. Typically, the smaller hospitals are located in remote, rural towns and have limited resources. Many of the smaller hospitals cannot provide operating room services and the majority have one or two practitioners who take calls from home to cover emergency patients. Facilities with fewer than 8000 emergency department visits per year rarely have 24-hour physician-staffed emergency departments.

During the project year, consultants made visits to many of the facilities including meetings with representatives from approximately 45 of the 52 facilities. It was clear to the planners that all hospitals are highly committed to providing quality care for injured patients.

Most of the rural communities rely on volunteer or semi-volunteer ambulance services for patient transport. These transport services are supplemented by non-transporting units which respond and stabilize patients until arrival of an ambulance.

Advance life support ground ambulance services are located in major population centers reaching an estimated 21% of the State's population within 15 minutes or less. When intermediate life support services are added, the figure rises to 32% of the population; however, this covers only 2% of the ground area of the State of Montana. There are seven advanced life support fixed and/or rotor wing programs in the State. If one adds helicopter scene responses, approximately 40% of the population has access to advanced life support. This figure does not adequately reflect problems with resource utilization, availability and weather.

As noted during the hospital visits and a written survey of prehospital care providers, quality trauma related operation and training programs are not consistently available. There is no organized, consistent statewide system of delivering EMS and/or trauma related education.

System Components

Administration

The State lead EMS agency is the EMS and Injury Prevention Section of the Montana Department of Public Health and Human Services. The Section has a multitude of responsibilities including:

- Trauma System planning
- Management of the EMT training and certification program
- EMS inspection and enforcement
- Statewide EMS planning
- Developing and proposing EMS legislation
- Licensing of emergency medical services of all levels (Basic, Defibrillation, Intermediate and Advanced Life Support) and types (ground, fixed wing, rotor wing ambulances and non-transporting medical units)
- Managing the First Responder and First Responder-Ambulance training programs
- Developing new curricula and special programs
- Coordinating ATLS training
- Managing the Montana Poison Control System
- Managing the Montana Trauma Register (hospital and system)

The EMS & IP Section is now planning a statewide prehospital EMS data collection, evaluation and quality improvement system.

The Section has several other statutory responsibilities including **COMFORT ONE ®** the prehospital Do-Not Resuscitate Program for terminally ill and seriously ill patients. The Section is also charged with the development of administrative rules and procedures for EMS providers who have sustained an exposure to the blood or body fluids of patients.

The current staff of the EMS & IP Section and their responsibilities are listed on the chart below:

POSITION TITLE	PRIMARY RESPONSIBILITIES
SECTION SUPERVISOR	Overall EMS & IP Section supervision Legislation development EMS system planning Montana Poison Control System
TRAINING COORDINATOR	Supervision of all training activities Supervision of all certification activities Coordination of Advanced Life Support training/certification
TRAUMA SYSTEMS COORDINATOR	Trauma system development Trauma register - state and hospital Computer database planning and implementation Advanced Trauma Life Support courses Financial management
ASSISTANT TRAINING COORDINATOR	Program management - Basic EMT training and certification
ASSISTANT TRAINING COORDINATOR	Program management - First Responder training/certification
TRANSPORTATION COORDINATOR	Emergency medical services inspection and licensing EMS & IP Section enforcement officer
DATA BASE TECHNICIAN	Trauma register support - report generation Dead at scene data accumulation and entry General EMS & IP Section database support
LICENSING/CERTIFICATION TECHNICIAN	Maintaining records and issuing certificates for all prehospital EMS certification Organizing and coordinating logistical arrangements for all EMT examination Office support for entire training section
ADMINISTRATIVE ASSISTANT	Administrative duties for transportation, trauma systems and administration

Trauma System Management

As the State EMS lead agency, the Section should have the responsibility for planning, implementing and managing a statewide trauma care system (see Legislative section). Currently EMS & IP is not properly staffed to fulfill these functions. The highest priority for additional staff is a half-time State medical director to oversee and advise the Section in medically related matters. The medical director should be a physician with EMS experience including rural EMS issues.

The current EMS & IP Trauma Coordinator has multiple other responsibilities including management of the Section computer system, financial management, Advanced Trauma Life Support training, assistant Section Supervisor duties and other assignments. The development and day-to-day management of an effective, statewide trauma system requires the commitment of a full-time trauma coordinator with a substantial clinical background (registered nurse with considerable experience in trauma systems management). The trauma coordinator would be responsible for the ongoing monitoring and management of the trauma program.

Currently the EMS & IP Section has a full-time data base technician funded through Highway Traffic Safety. These funds are scheduled to terminate within a year. Because data collection is of paramount importance to system analysis, this position must be supported as an integral component of the trauma system.

The additional work generated by the increase in staff, designation of facilities and coordination of advisory committees will require the services of a full-time clerical person.

EMS Advisory Council

A good statewide trauma system can only exist when there is a strong, adequately functioning EMS system. It has long been evident to the EMS & IP Section and strongly recommended by the 1991 NHTSA Technical Assessment team that there should be created by statute, a permanent State EMS Advisory Council to the Department of Public Health and Human Services. This Council would provide consistent statewide input of knowledgeable individuals and organizations and would constitute a good forum for discussion and resolution of EMS issues. This structure should foster better communication and support while decreasing fragmentation of advisory input, and should have a rotating chair position. The composition of the Council must be multidisciplinary to allow broad based input for statewide EMS planning and should include (but not be limited to): Providers; including medical, nursing, prehospital care, first responders, Montana Hospital Association; Indian Health Services; Fire Associations; Montana Medical and Nursing Associations; Montana

Emergency Medical Services Association; Montana Board of Medical Examiners and consumers.

The functions of the EMS Advisory Council should include:

- Providing input and guidance to the EMS Section in program development.
- Recommending budgets and budget priorities.
- Reviewing contracts or agreements with providers prior to action by Department of Public Health and Human Services.
- Reviewing requests for funding and making decisions regarding which agencies/groups should receive funding.
- Making recommendations for future growth and prioritization of EMS functions.
- Providing overall direction to subcommittees for policy making and program development. Coordinate and oversee subcommittee functions.

Trauma system legislation to be proposed to the 1995 Montana Legislature (see Legislative Section) will include a State EMS Advisory Council.

A suggested committee structure for the EMS Advisory Council is:

- **Medical Direction Committee**: This Committee, chaired by the State medical director, will meet four times a year and provide medical direction to the State EMS system. The Committee will be comprised of physicians, nurses, prehospital care providers and ad-hoc specialty consultants as needed. The chair of the statewide Trauma Advisory Committee (STAC) will sit on the Medical Direction Committee.

1**Statewide Trauma Advisory Committee**: The STAC will be chaired by the State chairman of the American College of Surgeons Committee on Trauma (ASCOT) or his/her designee. The composition of the Committee shall also include (but not be limited to): representatives (2) from the Regional Trauma Advisory Committees; the Montana Hospital Association; Montana Medical Association; Montana Trauma Coordinator group; Indian Health Services; Montana Private Ambulance Operators and Montana Emergency Medical Services Association. The Committee will be advisory to the EMS Advisory Council and the Department of Public Health and Human Services. The EMS & IP Section Supervisor, in conjunction with the State EMS Medical Director and the STAC, will direct the medical and administrative goals of the trauma system including:

  - Ongoing assessment of the State's trauma needs and resources.
  - Assuring that all providers have a role in the system.
  - Working with designated trauma facilities, both within and outside the State, to assure appropriate outreach and mutual aid programs.

- Assisting all the acute care facilities in the implementation of a hospital trauma data collection system.
- Establishing a prehospital data collection system capable of interfacing with the trauma data system and other appropriate data sources including highway safety.
- Designing and instituting a quality monitoring system, assuring compliance with appropriate State laws, regulations and local policies, procedures and contractual arrangements. This evaluation program must minimally conform to recommended standards as set forth by the American College of Surgeons (ACS) and Joint Commission on Accreditation of Healthcare Associations (JCAHO).
- Analyzing the impact and results of the system and recommending appropriate changes to assure the highest possible level of patient care.
- Assuring appropriate linkages between the trauma system and organ procurement organizations.
- Provide oversight to Regional Trauma Advisory Committees for:

  - QI, system evaluation
  - Education and training programs
  - Public education and prevention programs

Trauma Task Force (Interim)

There is no formal, advisory input to the Department of Public Health and Human Services' EMS & IP Section. While considerable reliance is placed on the many different provider groups that provide input, there is no planned or organized advisory structure to work with the Section to determine the future direction of EMS.

In 1991 the EMS & IP Section established a statewide multidisciplinary Trauma Systems Task Force to obtain advisory input on trauma system planning. The Task Force provided assistance with the selection of a Trauma Register and support for the concept of a data collection tool for injury in Montana. Membership included physicians, hospital administrators, nurses, prehospital providers and consumers. As the Task Force evolved, it provided broad-based input to the State EMS & IP Section on the development of a statewide trauma plan and system. Funding for the Task Force has been provided by Highway Traffic Safety and by the HRSA Trauma Planning Grant. With both of these sources being discontinued, no future funding is guaranteed. Until the EMS Advisory Council and its committee structure can be implemented, the Trauma Task Force should continue in its current capacity.

The Task Force is chaired by the Chairman of the American College of Surgeons, Montana Committee on Trauma, assuring much needed liaison and support from the surgical community. The Task Force has met on a quarterly basis to define system needs and guide

the trauma planning project.

Regional Trauma Advisory Committee (RTAC)

The State will be divided into three (3) regions to reflect current referral patterns between physicians and facilities. The RTAC purposes include:

- regional trauma planning
- communication
- education
- policy development
- public education
- injury prevention
- regional trauma quality improvement.

The Regional Trauma Facilities will be at the hub of the RTACs. The Regional Trauma Facilities will be responsible to develop and conduct an RTAC. If there are two Regional Trauma Facilities in a city, the facilities must work collaboratively to assure the success of the RTAC. Each RTAC will elect two representatives to the STAC.

The following is a description of the committee membership, duties and responsibilities:

2**Membership**: As a minimum, RTAC membership should include one person (selected by each facility's trauma committee) from each designated trauma facility in the region. Because each RTAC will have issues unique to their region, additional membership may vary from region to region and may include the use of ad-hoc clinical consultants.

Each trauma facility is required to have a multi-disciplinary trauma committee to deal with the trauma related activities in their catchment area. Since these trauma committees select the RTAC representative, RTAC membership is also multidisciplinary while remaining a manageable size. This structure also provides for a clear-cut method of input to the regional level while retaining local facilities as the "hub" of local trauma activities.

3**Communication** : The RTAC should meet quarterly to share information and issues, identify problems, collectively reach solutions and establish policy and procedures that will maximize the quality of care to the injured victim.

- **Quality Improvement**: The RTAC will be charged with writing clearly stated goals for QI, establishing regional standards of performance, establishing audit filters or indicators to monitor performance. These indicators should be based on the ACS and JCAHO recommendations for quality review, and be consistent with the minimums established by the STAC. Additionally, quality improvement should include the transport sequence

from triage to the receiving facility. All trauma facilities will participate in comparing patient outcome and system performance using the Trauma Register data. The results of these activities will be reported to the STAC.

- **Public Education and Awareness/Injury Prevention**: The RTACs will develop and implement a strategic plan for upgrading the skill level of all trauma team members. This plan must include, but not be limited to:

  - Assisting with prehospital education and training including upgrading ambulance personnel to EMT- Basic
  - Assure access to Critical Trauma Care and/or Prehospital Trauma Life Support course (or equivalent education) for prehospital providers.
  - Assuring all nurses have access to the training needed to meet standards for education and training as set forth in this document.
  - Coordinating with the Committee on Trauma and the EMS &IP Section to assure providers in the region have access to the ATLS course enabling them to successfully meet education standards set forth in this document.
  - Coordinating on-going professional education to decrease cost and duplication of resources. The coordination will assure all appropriate EMS providers are familiar with the regional trauma system, its protocols, its activation, and quality improvement programs.

- **Policy Development**: One of the key purposes of the RTAC is to establish and recommend to the STAC standards of care and performance criteria. There are many issues related to medical direction of basic services, dispatch of ground and air ambulances, allocation of resources and field triage criteria which need local solutions consistent with statewide standards. The RTAC will make recommendations to the STAC and ultimately the EMS Advisory Council to provide creative solutions and policy change.

Medical Direction

Medical direction encompassing medical supervision and system accountability, is an essential component of a trauma and emergency medical system. Trauma care system organization is comparable to that of a hospital; there must be an administrator responsible for management and a medical director responsible for the quality of care.

The State EMS Medical Director will work with the prehospital care medical directors, the Trauma Directors and the State Medical Directors Committee. Currently, medical direction is required for services and personnel at EMT-D, EMT-I, and ALS levels of care but not at the basic life support level. Medical direction is desirable at all levels of prehospital care.

The Regional Trauma Advisory Committees will assist with developing local solutions to improving medical direction availability and consistency to all services.

Legislation

There is no statutory authority allowing for the designation of trauma facilities nor for the creation of a statewide trauma system. Legislation will be introduced in 1995 providing the Department of Public Health and Human Services with the authority and obligation to create a statewide trauma system.

The legislation will authorize the Department to promulgate administrative rules regarding trauma facility designation, triage criteria, quality improvement programs, data reporting requirements, and system compliance. In addition, this legislation will protect the designation of trauma facilities from anti-trust violations, provide statutory protection from discovery to QI data and protect the proceedings of any statewide or regional trauma quality improvement program.

To assure a long-term, viable trauma system, the 1995 Trauma Legislation will include provisions for dedicated statewide funding.

Finance

There is no funding source for the development, implementation and maintenance of the statewide trauma system. Without dedicated funding, the EMS and Trauma Systems may fail. A statutorily authorized dedicated funding source must be established to assure the viability of this trauma system and emergency medical services.

There is considerable precedence in other states for dedicated funding mechanisms for EMS and trauma systems. Some of these include:

- Vehicle Registration Fees
- Traffic Violation Fees
- Civil Penalty Fines
- Tobacco/Alcohol Tax
- Parcel Tax
- Drivers License Fees

There is Montana precedent for both vehicle registration assessments and traffic violation fines. In 1993 the legislature approved, in concept, the addition of supplementary fines on the current $5.00 energy wasting fines for speeding violations to provide funds for head injury prevention programs.

Neighboring states have used motor vehicle registration assessments and drivers license fees to provide funds for EMS/Trauma systems. This plan recommends the use of one of two funding approaches: motor vehicle registration assessment or an increase in the energy wasting fine for speeding violations.

The application of a vehicle registration assessment of $1.27 per personal passenger vehicle, bus, truck and motor home (includes motorcycles, snowmobiles, etc.) would generate approximately $900,000 annually. These revenues would be sufficient to fund the implementation and operation of a statewide trauma system, provide limited funding to regional programs and establish a matching funds grant-in-aid program for local EMS provider organizations (including hospital and medical assistance facilities.

An increase in the energy wasting fine to $18.00 would also generate approximately $900,000.

Local Grant Program

The development of an adequate statewide trauma program depends on a fully functioning emergency medical services system. Because viable local EMS systems are essential to trauma system development and maintenance, their financial support is appropriate for inclusion in a statewide trauma system plan. The provision of local funding also allows the "targeting" of specific statewide problem areas for remediation each year by the "earmarking" of funds for specific purposes. This increases the likelihood of consistent statewide trauma system development.

The need for a stable source of funding for local EMS systems has long been identified in Montana. This was recommended in 1988 by the Department of Public Health and Human Services Emergency Medical Services Advisory Council and confirmed again by the outside evaluation completed by the technical assistance team comprised of National EMS experts in the National Highway Traffic Safety Administration 1991 statewide technical assessment.

To effectively support local EMS systems and local trauma system development activities, this plan recommends that $500,000 be available for a local grant support program. These funds should be available as a grant-in-aid program to EMS provider organizations (including hospitals and medical assistance facilities) to assist them on a 50-50 matching fund basis with the procurement of special equipment, training, or other needs. An eligible EMS provider would apply for these funds with a simple application form. Once completed, the application would be reviewed by the provider's RTAC with a recommendation for approval/disapproval forwarded to the STAC for review. The final allocation decision would be made by the EMS Advisory Council. The following factors would apply:

- the applicant would have to demonstrate sufficient need for the grant.

- the application must be consistent with overall State EMS and trauma system priorities as determined by the STAC and the State EMS Advisory Council. This then allows statewide priorities to be consistently addressed while assisting local EMS providers with meeting their needs.

Budget

The establishment and ongoing maintenance of a statewide trauma program will require additional staff as well as ongoing costs. The following is a tentative projected budget for implementation and on-going operation of the trauma program:

Personnel		
Database Technician 1.0 FTE	$30,823.00	
Trauma Systems Coordinator 1.0 FTE	39,549.00	
Clerical Support 1.0 FTE	25,992.00	
Medical Director 0.5 FTE	38,417.00	
		$134.781.00
Contractual		
Site Visit Teams	$15,111.00	
Public Education/Prevention	45,000.00	
Data Processing	15,000.00	
Trauma Register Users Meetings	6,000.00	
Trauma Register Software Updates	5,000.00	
Run Report Software Upgrades	5,000.00	
		$91,000.00
Operating Expenses		
Statewide EMS Advisory Council including STAC and Associated Activities	$39,000.00	
Supplies and Materials	4,000.00	
Communications and Postage	5,000.00	
Repairs and Maintenance	2,000.00	
Staff Training	3,000.00	
Data Processing	8,000.00	
Travel	5,000.00	
Equipment	5,000.00	
Office Space	5,000.00	
Legal	5,000.00	
RTAC Funding for Training and Prevention Programs	60,000.00	
Scannable Run Report Forms	10,000.00	
		$151,000.00
Local Grant In Aid Program (50-50 Match)		500,000.00
TOTAL TRAUMA SYSTEM DEVELOPMENT BUDGET		**$876,781.00**

Operational/Clinical Components

Public Education and Prevention

The ultimate goal of any healthcare program is the prevention of the disease or injury itself. Trauma is no different. Public awareness and understanding are crucial to preventing unnecessary death and disability from injury.

The public and elected officials must become aware of the number of lives lost from injury; the number of lives permanently altered because of head injury as well as other disabling injuries; the number of families devastated by the loss of a member and the impact on individuals, families, communities, hospitals and the State, resulting from injury.

A major goal of the trauma system must be the development of strategies for the establishment and coordination of public education and awareness programs. This should be a joint activity between the STAC, the EMS &IP Section, the Highway Traffic Safety Division, Department of Justice, the RTACs and other ongoing prevention activities. Cooperation with existing public and private organizations is essential to avoid duplication of efforts and to facilitate cost containment.

Each trauma facility, as a condition of designation, must develop or show evidence of participation in a public education component coordinated through the Regional Trauma Advisory Committee with oversight provided by the STAC. Through the coalescing of ideas and coordination of programs via the RTAC, duplication of efforts and resource expenditures will be minimized.

An integral element of the Montana State Trauma System is the State Trauma Register. All designated trauma facilities will participate in and support this information system. Epidemiological information related to cause and frequency of injury will be made available by the Section to all hospitals and public education/prevention programs. This information, along with epidemiological information available from other sources, such as the Highway Traffic Safety Division and the Montana Highway Patrol, will be used to target specific injury patterns or groups for targeted education programs.

Prehospital Care

Advanced life support ground ambulance services are located in major population facilities and it is estimated they can reach approximately 21% of the population within 15 minutes or less. When intermediate life support services are added, the figure rises to 32% of the population while covering less than 2% of the ground area of Montana. There are rotor-wing aircraft programs in the State capable of providing some scene rescue. The addition of the advanced life support rotor-wing air ambulance services bring these figures to approximately 40% of the population covered with ALS service. Fixed-wing services are located in Billings, Glasgow, Great Falls and Missoula. Rotor-wing services are operated out of Missoula, Billings, Kalispell and Great Falls.

The remainder of the State is covered by providers of various levels of training, including EMT-D, EMT-Intermediate, EMT-Basic, First Responder, First Responder-Ambulance and Advanced First Aid. Licensed non-transport units provide a rapid initial response to patients and provide care while awaiting the arrival of the more distant ambulance service to transport.

The majority of prehospital care services outside of the urban areas are provided by volunteers. There is no stable source of funding to support prehospital education and training. The majority of the rural services are "fee for service" and also rely on community fund raising or city or county contributions for additional revenues. In response to a survey conducted in spring of 1993, greater than 60% of prehospital personnel do not have any specific trauma training. The prevalent courses for those that do are the Critical Trauma Care course (CTC) and Prehospital Trauma Life Support course (PHTLS).

The majority of the services function under State EMS prehospital treatment protocols. These protocols were developed by a medical directors committee and have been approved by the EMS &IP Section and the Montana Board of Medical Examiners. The EMS &IP Section is currently meeting with the Board of Nursing to better define the training and performance expectations of nurses functioning in the prehospital environment.

EMS responses are dispatched locally, (often via a 911 system) but frequently with no formal dispatch protocol nor method of call/service coordination. Statewide protocols need to be established for the use of helicopters for trauma patient scene response. Consistent with an inclusive trauma system, these protocols should require responding aircraft to take the patient to the closest, most appropriate facility, not necessarily their home base.

The EMS &IP Section should continue its plans for a statewide, standardized, prehospital database. Through the use of this database and by accepting National Highway Transportation Safety Administration's uniform prehospital dataset, the State will be able to evaluate outcome and compliance with protocols in the prehospital setting. Another use of the data would be ongoing licensure of prehospital services as well as gathering excellent statewide demographic and system compliance information. With a good prehospital data system, the Section could base continued EMS licensure on the existence of a local quality improvement program. Implementation of total quality management programs at the State and local levels is critical.

Medical Direction

No medical control is required for Basic Life Support services. The RTAC will assist with the development of local solutions to improve the availability and coordination of medical control at all levels of care.

Triage

Where there is more than one designated trauma center within a thirty (30) minute transportation range, patients meeting certain trauma triage criteria should be transported to the closest, highest level trauma center. While this standard contemplates ground transport times, air transport units should comply assuming appropriate landing facilities exist.

In those cases where a major trauma patient is equal distance to more than one trauma center, the patient should be transported to the highest level facility. These criteria should also be used to signal the activation of the trauma team from the field prior to the patient's arrival in the emergency department. In some instances, this may signal the activation from the field, via a Central Medical Resource number, of an interfacility transport team. It is critical that all first responders and non-transporting units receive training on the importance of triage principals and major trauma patient recognition so as to not delay trauma team activation and interfacility transport teams when appropriate.

The RTAC will be responsible to develop prehospital triage criteria and the system activation guidelines for their region.

Suggested trauma system activation criteria includes the following:

- All injured pediatric patients
- All injured adult patients meeting the following clinical parameters:
  - -Glasgow Coma Scale <14 or
  - -Systolic Blood Pressure <90 or
  - -Respiratory rate <10 or >29
  - -All penetrating injuries to head, neck, torso, extremities proximal to elbow and knee.
  - -Flail chest
  - -Two or more proximal long bone fractures
  - -Pelvic fractures
  - -Limb paralysis
  - -Amputation proximal to the wrist or ankle

Transportation

Transportation involves several levels. Primary transport occurs from the scene to the nearest facility. Secondary transport of injured patients (interfacility) involves the utilization of advanced life support systems to transfer an injured patient to a facility that has the capabilities of providing higher levels of care.

Each RTAC will be responsible to develop a Central Medical Resource System. This system will provide a central clearinghouse for dispatch and secondary transport (and in some instances, primary transport). There are limited aeromedical resources in the State, no system for priority usage of fixed-wing versus rotor-wing aircraft and no coordination of medical control. Consequently, rural providers attempting to transfer a patient to an urban hospital are forced to call individual services and, many times, may make two or three calls before finding a crew and aircraft capable of responding. This frequently causes an unnecessary delay in transport. Because there is no rational, organized plan, each service attempts to meet the demands to the best of their ability. However, this does not always assure appropriate utilization of resources. The Central Medical Resource System can be as simple as a WATTS line into one location in a region, where the rural provider is assured his one phone call will be responded to by a knowledgeable dispatcher. The dispatcher, in turn, will be guided by policy developed by the RTAC and will dispatch the appropriate air or ground ambulance based on the nature of the call, distance, and availability of resources. The dispatcher will be continuously updated by the flight program as to the availability and capabilities of aircraft. This process will afford better communication between air ambulance services and maximize the utilization and availability of resources to expedite safe patient transfers.

The State communications plan should be updated to coincide with this new system, and to assure compatibility with the EMS radio service authorized by the Federal Communications Commission and with "refarming" initiative proposed by the FCC. The State communications system needs to be updated to meet the needs of trauma system operations.

Trauma facilities must work collaboratively with the referral centers in their region and develop interfacility transfer guidelines. These guidelines must address criteria to identify high risk trauma patients that could benefit from a higher level of trauma care. All facilities will agree to provide services to the trauma victim regardless of their ability to pay.

Transfer protocols must be written for referral to specialty centers (i.e. pediatric, burn or spinal cord injury) if the services are not available at the trauma facility. The transfer protocols must include a feedback loop so that the primary provider has a good understanding of the patient outcome.

Verification and Designation

The Department of Public Health and Human Services shall have the authority and responsibility for the designation of trauma facilities/hospitals. The use of the words, "Trauma Center" or "Trauma Facility" or any implication of such designation by a hospital without formal designation by the Department of Public Health and Human Services shall be prohibited.

Upon approval of this plan and adoption of the 1995 Trauma Legislation, the EMS & IP Section will solicit trauma center designation from all facilities. Since this plan contemplates an inclusive trauma system, it is anticipated that all hospitals will participate. In the interim period of time, prior to legislative approval, the EMS & IP Section will support the efforts of the hospitals to begin meeting the plan's standard. Higher level trauma facilities should work collaboratively with other trauma facilities in their region to develop interfacility transfer protocols.

Hospitals wishing to be designated will be required, in their responses, to show how they meet the criteria, as set forth in this plan, for the level of designation they are applying. The Department of Public Health and Human Services may set a designation process fee in order to offset their costs in performing the designation.

Regional Trauma Centers and Area Trauma Hospital applicants will have their written responses reviewed by Section staff and a select group of trauma specialists from outside the State. Section staff and a select group will visit each facility applying for Regional Trauma Center and Area Trauma Hospital designation to verify the information submitted in their application.

Community Trauma Hospitals and Trauma Receiving Facilities will have their applications reviewed by Section staff and a select group of Montana surgeons and nurses from within the State, appointed by the STAC. This group will visit the facilities to verify the information submitted in their application.

After verifying an applicant with a site visit and review of documentation, the recommendations from the review teams will be forwarded to the STAC. The STAC will recommend to the Department of Public Health and Human Services the approval or disapproval of the applications. After approval of an applicant hospital by the Department, the Section shall execute a three year contract with the hospital for designation as a trauma facility.

In the event the applying hospital wishes to contest the STAC recommendation, the EMS Advisory Committee will review the publication and STAC findings and make a final recommendation to the Department. Detailed procedures, consistent with the Montana Administrative Procedures Act, and providing due process, will be established for verification, designation, appeals and de-designation.

Ongoing designation will be based on a review of outcome studies and system compliance as measured by the Trauma Register and the work of the RTACs and STAC. All facilities will be reviewed every three years to assure on-going compliance with the requirements. At that time, a new contract will be awarded. While it is not expected, the STAC may be requested to recommend that a trauma facility receive an interim review by a site-survey team if significant problems are documented by the Quality Improvement process.

While it is the intent of this plan to provide trauma care for injured patients at facilities within Montana, in certain areas patients are occasionally taken directly from the field to trauma facilities outside Montana. The State EMS & IP Section chief will coordinate with the director of the lead agency in the other state and request the specific criteria by which the out of state trauma facility was designated. These criteria will be forwarded to the regions' RTAC for review and consideration. If their designation criteria appear consistent with the Montana criteria, the RTAC will recommend to the STAC that Montana recognize them as an equivalent trauma facility. The State trauma coordinator will work with the out of state facility to assure the "capture" of pertinent trauma system data.

Evaluation

Monitoring, evaluation and quality improvement at the prehospital, hospital and system level are critical elements of a Trauma/EMS system. A system must be able to monitor its own performance and to assess its impact on trauma mortality and morbidity. This will require a plan for continuous evaluation of operations, demonstration that the system is meeting its stated goals, and the documentation of system performance. The quality improvement process will assure these goals are met.

Data Collection

The EMS IP Section currently maintains a State Trauma Register with 13 hospitals providing data. The hospitals collect prehospital and hospital trauma data to be utilized for internal and regional quality improvement purposes. The hospitals send a limited amount of data to the Section for aggregation into the statewide program. All designated trauma facilities will be expected to participate in trauma data collection and reporting Regional Trauma Centers may be expected to assist other facilities with the completion of the Trauma Register. In some circumstances, where the rural trauma center has a small volume of patients, the Regional Trauma Center may actually provide data entry of the abstracted data for that facility.

Trauma Center Quality Improvement

The goal of the Quality Improvement process is to monitor the process and outcome of trauma patient care, document appropriate and timely provision of care according to established standards, and to provide an on-going mechanism for correction of problems. All designated hospitals will be required to participate in Trauma Quality Improvement. In order to implement an effective process, the following key components (where applicable) must be addressed by the Quality Improvement Plan submitted by each applying facility:

- An organizational structure which facilitates the process of quality improvement.
- Clearly stated goals and objective of the quality improvement plan.
- The development of standards of care.
- A process to delineate surgical privileges for surgeons providing trauma care.
- Established quality indicators (audit filters). The plan must include, minimally, the recommended audit filters by the ACS and the JCAHO. The plan should define adverse outcomes by using an explicit list of well defined complications.
- A systematic informed peer review process utilizing a multidisciplinary method including prehospital care providers.
- A plan to incorporate autopsy information for all trauma patients. Complete anatomical diagnosis of injury is essential to the quality of trauma care.
- A facility plan that includes a method for computing survival probability and comparing patient outcomes. The standard outcome tool, TRISS, should be utilized and is currently a component of the Hospital Trauma Register.

Statewide Trauma System Evaluation

The Section will require all trauma facilities to collect data on all patients meeting the Trauma Register inclusion criteria. A limited subset of this data will be transmitted to the Section for inclusion in the State System Trauma Register. The State System Trauma Register will be used to evaluate overall performance and system compliance. The STAC will establish minimum Quality Improvement indicators for use by the RTACs.

The STAC will review system compliance issues and other matters brought forward by the RTACs. The STAC will meet two (2) times per year to review statewide system compliance and make recommendations for system improvement.

Regional Trauma Advisory Committee

The Regional Trauma Advisory Committee will review certain clinical and system issues identified through a series of filters built into the Trauma Register. The State trauma coordinator will provide aggregated regional information to the RTACs at regular intervals.

For effective review and critique of trauma cases, confidentiality of the information discussed in these committees must be assured. The proposed 1995 Trauma Legislation will include protection from discovery of the QI discussions that take place in these RTACs and provide liability protection for the QI participants. When performing quality improvement reviews, the actual discussions and records of the committees should be protected from discovery. Specific patient information or medical records will remain discoverable through established channels.

The RTAC will be responsible for establishing the audit criteria for cases to be reviewed. Each case reviewed by the committee will have a finding of appropriateness of care rendered and will, where appropriate, make recommendation for changes either at the regional level or carried through to the STAC.

Definitive Care/Facility Standards

The purpose of designation is to allow healthcare facilities to determine the level of trauma care they wish to provide. Designation affords healthcare providers a means of recognizing the various levels of service capabilities, within their own institutions and other facilities, thus allowing them to make informed decisions as to the care and treatment of their injured patients. In urban areas, designation may assist with determining patient destination. Designation is not intended to provide a means of determining hospital capabilities by the lay public. Designation of trauma facilities should not be used to determine levels of funding and/or reimbursement.

To avert the concept that one level is necessarily better than another, numeric indicators for facility designation have been avoided. Rather, a title descriptive of the trauma care capabilities of the facility is used. Currently, the State of Montana does not have an Academic Trauma Center. If such a center would become available in the future, this plan will be amended appropriately.

Regional Trauma Centers

To be designated as a Regional Trauma Center (RTC), a licensed general acute care hospital shall have at least the following:

I. Hospital Organization

A. Trauma Service

The trauma service must be established and recognized by the medical staff and its bylaws and be responsible for the overall coordination and management of the system of care rendered to the injured patient. The trauma service must come under the organization and direction of a general surgeon who is trained, experienced and committed to the care of the injured person. All patients with multiple system trauma or major injury must be evaluated by the trauma service. The surgeon responsible for the overall care of the patient must be identified.

B. Trauma Program Director

The director must be a board certified surgeon with demonstrated competency in trauma care. The director will be responsible to develop a quality improvement process and, through this process, will have responsibility for all trauma patients and administrative authority for the hospital's trauma program. The director must be given administrative support to implement the requirements specified by the State Trauma System Plan and provide full coordination with the Department of Public Health and Human Services, Emergency Medical Services and Injury Prevention Section. The director is responsible to work with the credentialing process of the hospital and, in

consultation with the appropriate service chiefs, recommend appointment and removal of physicians from the trauma team. It is strongly recommended that the director be an instructor in the American College of Surgeons Advanced Trauma Life Support (ATLS) course, maintain personal involvement in care of the injured, educated in trauma care, and involved in professional organizations. The trauma director, or his designee, must be actively involved with trauma care development at the community, state, or national level.

C. Trauma Team

The team approach is optimal in the care of the multiply injured patient. Policy should be in place describing the respective role of all personnel on the trauma team. The composition of the trauma team in any hospital will depend on the characteristics of that hospital and its' staff. The team leader must be a qualified surgeon who is clinically capable in all aspects of trauma care. Suggested composition of the trauma team may include:

- Nurses: ED, OR, ICU, etc.
- Emergency Physicians
- Anesthesiologists
- Social Services/Pastoral Care
- Physician Specialists as dictated by clinical needs
- Respiratory Therapists
- Radiology Technicians
- Laboratory Technicians

D. Qualifications for Surgeons on the Trauma Team

As a general rule, all surgeons on the trauma team should be board certified in a surgical specialty recognized by the American Board of Medical Specialties, a Canadian board, or other equivalent foreign board. However, it is understood that many boards require a practice period, and that complete certification may take three to five years after residency. If an individual has not been certified five years after successful completion of residency, that individual is ordinarily unacceptable for inclusion on the trauma team. The surgeons must participate in the Multidiciplinary Trauma Committee and the QI process. All general surgeons participating on the trauma team must have completed an ATLS course, and be involved in at least 10 hours of trauma-related CME annually. Over a 3 year period, one-half of these hours should be obtained outside the surgeon's own institution.

E. Trauma Coordinator

Every Regional Trauma Center must have a full-time dedicated registered nurse working in the role of trauma coordinator. Working in conjunction with the trauma director, the trauma coordinator is responsible for organization of the program and all

systems necessary for the multidisciplinary approach throughout the continuum of trauma care. She/he is responsible for coordinating optimal patient care for all injured victims. Suggested credentials for this position include: current RN licensure, Trauma Nurse Core Curriculum (TNCC) provider certification (or equivalent education), demonstrated expertise in trauma care, five or more years clinical nursing experience, experience with hospital quality management programs including a Trauma Register, experience in education program development and membership in professional organizations. It is highly recommended that this individual has an undergraduate degree.

F. Multidisciplinary Trauma Committee

The purpose of the committee is to provide oversight and leadership to the entire trauma program. The major focus will be quality improvement activities, policy development, communication among all team members, develop standards of care, education and outreach programs and work with appropriate groups for injury prevention. Suggested membership for the committee includes representatives from:

- Emergency Department
- Neurosurgery
- Pediatrics
- Intensive Care
- Administration
- Respiratory Therapy
- Laboratory
- Operating Room
- General Surgery
- Orthopedics
- Anesthesia
- Trauma Coordinator
- Radiology
- Rehabilitation
- Prehospital Care Providers

The clinical managers (or designee) of the departments involved with trauma care should plan an active role with the committee.

II. Clinical Components

A Regional Trauma Center must have the following medical specialists immediately available to the injured patient:

(A) Emergency Medicine
(B) Trauma/General Surgery[1]
(C) Anesthesia[2]

The following specialists should be on-call and promptly available from inside or outside the hospital:

Cardiology
Internal Medicine
Neurologic Surgery
Obstetrics/Gynecologic Surgery
Ophthalmic Surgery
Oral/Maxillofacial/Plastic Surgery
Orthopedic Surgery
Pediatrics
Pulmonary/Intensive Care Medicine
Radiology
Thoracic Surgery
Urologic Surgery
Vascular Surgery
Physical Medicine and Rehabilitation

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[1] The trauma surgeon on-call must be unencumbered and promptly available to respond to the trauma patient. Local criteria must be established to define conditions requiring the trauma surgeon's immediate hospital presence. The trauma surgeon's participation in major therapeutic decisions, presence in the emergency department for major resuscitation, and presence at operative procedures is mandatory. A system must be developed to assure early notification of the on-call surgeon and compliance with this criteria and their appropriateness must be documented and monitored by the QI process.

[2] Anesthesia must be promptly available with a mechanism established to ensure early notification of the on-call anesthesiologist. Local criteria must be established to determine when the anesthesiologist must be immediately available for airway emergencies and operative management. The availability of the anesthesiologist and the absence of delays in airway control or operative anesthesia must be documented and monitored by the QI process.

It is desirable to have the following specialists available to a Regional Trauma Center:

Cardiac Surgery
Hand Surgery
Infectious Disease
Microvascular Surgery
Pediatric Surgery

The staff specialist on-call will be notified at the discretion of the trauma surgeon and will be promptly available. This availability will be continuously monitored by the quality improvement program. The specialist involved for consultation to the trauma patient should be appropriately board certified and have an awareness of the unique problems of the trauma patients.

A general/trauma surgeon is presumed to be qualified and have privileges to provide thoracic surgical care to patients with thoracic injuries. If this is not the case, the facility should have a board certified thoracic surgeon available

Policy and procedures should exist to notify the patient's primary physician of the patient's condition at an appropriate time.

III. Facility Standards

A. Emergency Department

The facility must have an emergency department, division, service, or section staffed so that trauma patients are assured immediate and appropriate initial care. The emergency physician must be in-house 24 hours/day and immediately available at all times, capable of evaluating trauma patients, providing initial resuscitation, and performing necessary surgical procedures not requiring general anesthesia.

The emergency department medical director must be board certified in emergency medicine and he/she should have competed an ATLS course. In general, the emergency medicine physician participating with the trauma team should be board certified in a specialty recognized by the American Board of Medical Specialties, a Canadian Board, or other equivalent foreign board. However, it is understood that many boards require a practice period, and the complete certification may take three to five years after residency. If an individual has not been certified five years after completion of a residency that individual is unacceptable for inclusion on the trauma team. The emergency medicine physicians participating on the trauma team must complete an ATLS course and participate in CME activities related to trauma care.

The emergency medicine physician will be responsible for activating the trauma team based on a predetermined criteria. He/she will provide team leadership and care for the trauma patient until the arrival of the surgeon in the resuscitation area. The emergency department must have established standards and procedures to ensure immediate and appropriate care for the adult and pediatric trauma patient. The emergency department medical director, or his designee, must participate with the Multidisciplinary Trauma Committee and the trauma QI process.

A-1. Nursing Personnel

Emergency nurses shall have special expertise in trauma care and have a current RN licensure. It is highly recommended that emergency nurses successfully complete Trauma Nurse Core Curriculum (or equivalent education), maintain evidence of continuing education in trauma nursing, and participate in the ongoing QI process of the trauma program. It is highly recommended that nurses in the emergency department demonstrate special expertise in emergency nursing by acquisition and maintenance of a Certified Emergency Nurse (CEN) certificate.

There should be a minimum of two RN's staffed for the trauma resuscitation area in-house 24 hours/day.

A-2. Prehospital Care

The trauma facilities will take the lead role for organizing and developing RTACs. These RTACs shall be accountable to provide medical supervision of prehospital triage, treatment and the development, implementation and oversight of the transfer protocols for the Area Trauma Hospitals, Community Trauma Hospitals and Trauma Receiving Facilities.

B. Surgical Suites

B-1. Nursing Personnel

The operating room must be staffed in-house 24 hours/day. This requirement may be met by a technician or nurse who is capable of responding to the trauma resuscitation area, anticipating the operative needs of the patient, initiating the call process for on-call staff and preparing the operating theater for the patient.

The OR nurses should participate in the care of the trauma patient and be competent in the surgical stabilization of the major trauma patient. Nurses should have current RN licensure, be trained in principles of resuscitation,

mechanism of injury theory, poly-trauma, and knowledge of surgical instrumentation. The surgical nurses are an integral member of the trauma team and must participate in the on-going QI process of the trauma program and must be represented on the Multidisciplinary Trauma Committee.

B-2. Polices and Procedures

Policy and procedures must be in place for the following:

1. Prioritized room availability for the emergent trauma patient during a busy operative schedule.

2. Notification of "on-call" surgical teams for both single and multiple patient admission.

3. Guidelines for managing death in the operating room and organ procurement.

4. Guidelines for preservation of evidence.

5. Policy for patient monitoring by an RN while the patient is in transport to the radiology suite or intensive care unit from the operating suite.

6. Policy for immediate access of blood and blood products to the operating suite.

B-3. Anesthesia

Anesthesia must be promptly available with a mechanism established to ensure early notification of the on-call anesthesiologist. Trauma centers must document conditions when the anesthesiologist must be immediately available for airway emergencies and operative management of the trauma patient. The anesthesiologist participating on the Trauma Team, as a general rule, should be appropriately board certified or board eligible, have the necessary educational background in the care of the trauma patient, participate in the Multidisciplinary Trauma Committee and the trauma QI process.

C. Intensive Care Unit

The Regional Trauma Center shall have an Intensive Care Unit (ICU) which meets the requirements of licensure in the State of Montana. Additionally the ICU shall have:

C-1. Medical Director

The Medical Director for the Intensive Care Unit (ICU), is responsible for the quality of care and administration of the ICU. In a mixed ICU, the Trauma Program Director, or his designee, will work as a Co-Director with the ICU Medical Director to set policy and establish standards of care to meet the unique needs of the trauma patient. This expertise may be demonstrated by any of the following: Certificate of Added Qualification in Surgical Care from the Board of Surgery, or documentation that in the previous 12 months there was active participation by the individual in the ICU administration and quality improvement process and direct involvement in the ICU care of the trauma patients.

C-2. Physician Coverage

Trauma patients admitted to the ICU should be admitted under the care of a general surgeon. Guidelines may be written for the rare exception to this rule (i.e. isolated head injury that the neurosurgeon agrees to manage). In addition to overall responsibility for patient care by the primary surgeon, there must be in-house physician coverage for intensive care at all times. This coverage may be provided by a physician who is credentialed by the hospital and the medical director of the ICU in critical care. This coverage is clearly for emergencies only (i.e. an unexpected extubation of an ICU patient) and is to ensure the patient's immediate needs are met while the primary surgeon is contacted.

C-3. Nursing Personnel

Regional Trauma Centers should provide staffing in sufficient numbers to meet the critical needs of the trauma patient. Critical care nurses must have a current RN license. The nurses should show evidence of completion of a structured inservice program which includes didactic and clinical content related to the care of the trauma patient. It is highly recommended that nurses in the ICU demonstrate special expertise in critical care by acquisition and maintenance of a CCRN certification. ICU nurses are an integral part of the trauma team and as such, should be represented on the Multidisciplinary Trauma Committee and participate in the QI process of the trauma program.

D. Post Anesthesia Recovery Room (PAR)

A Regional Trauma Center should have a PAR staffed 24 hours/day and available to the post-operative trauma patient. Frequently it is advantageous to bypass the PAR

and directly admit to the ICU. In this instance, these requirements may be met by the ICU.

D-1. Nursing Personnel

PAR nurses must have current RN licensure. The nurses should show evidence of completion of a structured inservice program which includes didactic and clinical content related to the care of the trauma patient. PAR nurses are an integral part of the trauma team and as such, should be represented in the Multidisciplinary Trauma Committee and participate in the QI process of the trauma program.

PAR staffing should be in sufficient numbers to meet the critical needs of the trauma patient.

IV. Clinical Support Services

A Regional Trauma Center shall have the following service capabilities:

A. Radiological Service

A radiological service shall have a certified radiological technician in-house and immediately available at all times for general radiologic procedures, angiography, imaging services, sonography, computerized tomography (CT), for both head and body. If the technician is not in-house 24 hours/day for CT, angiography or sonography, the quality improvement process must document and monitor that the procedure is promptly available. A board certified radiologist should administer the department and participate actively in the trauma QI process. Written policy should exist delineating the prioritization/availability of the CT scanner for trauma patients.

B. Clinical Laboratory Service

A clinical laboratory service shall have the following services available 24 hours/day:

1. Comprehensive blood bank or access to a community central blood bank and adequate storage facilities.

2. Standard analysis of blood, urine, and other body fluids.

3. Blood gas and pH determinations (this function may be performed by services other than the clinical laboratory service, when applicable).

4. Drug, alcohol and appropriate testing for communicable diseases.

5. Massive transfusion policy.

Sufficient numbers of clinical laboratory technologists shall be in-house 24 hours/day and promptly available at all times.

C. Social Service/Pastoral Care Support

The nature of traumatic injury requires that the psychological needs of the patient and family are considered and addressed in the acute stages of injury and throughout the continuum of recovery. Adequate numbers of trained personnel should be readily available to the trauma patients and family. Programs should be available to meet the unique needs of the trauma patient.

D. Rehabilitation

The rehabilitation of the trauma patient and the continued support of the family members is an important part of the trauma system. There are no free-standing rehabilitation hospitals in the State of Montana. However, there are many excellent approved in-patient programs in the State. Each facility will be required to address a plan for integration of rehabilitation into the acute and primary care of the trauma patient, at the earliest stage possible after admission to the trauma center. Designated hospitals will be required to identify a mechanism to initiate rehabilitation services and/or consultation upon admission as well as policies regarding coordination of the Multidisciplinary Rehabilitation Team. Policies must be in place to address the coordination of transfers between acute care facilities and rehabilitation facilities. Transfer agreements should include a feedback mechanism for the acute care facilities to update the healthcare team on the patients progress and outcome for inclusion in the Trauma Register.

The Section will develop a complete facility guide outlining the available rehabilitation services in Montana and the contiguous states

E. Outreach

As a Regional Trauma Center, the Trauma Program is responsible to develop programs for consultation with physicians in the region. Additionally, the trauma center through the RTAC, will be responsible for facilitation of professional educational programs for prehospital care providers, nurses, and physicians in the area trauma hospitals, community trauma hospitals and trauma receiving facilities in their region.

F. Prevention/Public Outreach

The Regional Trauma Center will be responsible to take a lead role in coordination of appropriate agencies, professional groups and hospitals in their region to develop a strategic plan for public awareness. This plan should take into consideration public awareness of the trauma system, access to the system, public support for the system, as well as specific prevention strategies. Substance abuse is consistently linked with traumatic injury and must be a key focus for prevention. Prevention programs should be specific to the needs of the region. The Trauma Register data should be utilized to identify injury trends and focus prevention needs. This planning must be done in coordination with the RTAC.

G. Transfer Protocol

Regional Trauma Centers should work collaboratively with the referral trauma facilities in their region and develop interfacility transfer protocols. These guidelines must address criteria to identify high risk trauma patients that could benefit from a higher level of trauma care. All Centers/Hospitals/Facilities will agree to provide services to the trauma victim regardless of their ability to pay.

Transfer protocols must be written for specialty referral centers such as burn or spinal cord injury centers if the services are not available at the trauma center. The transfer agreement must include a feedback loop so that the primary provider has a good understanding of the patient outcome.

H. Quality Improvement/Evaluation

A key element in trauma system planning is evaluation. All trauma centers will be required to participate in the Trauma Register and submit data to the EMS & IP Section as requested. The Regional Trauma Centers will be responsible to assist the area trauma hospitals, community trauma hospitals and receiving trauma facilities in establishing the data collection process and, if necessary, provide data entry into the register from abstracted patient records.

Each trauma center must develop an internal Quality Improvement plan that minimally addresses the following key components:

- An organizational structure which facilitates the process of quality improvement (Multidisciplinary Trauma Committee).
- Clearly stated goals and objectives of the quality improvement plan.
- The development of standards of care.
- A process to delineate privileges for all physicians participating in trauma care.

- Established quality indicators (audit filters). The plan must include minimally the recommended audit filters by the ACS and the JCAHO. The plan should define adverse outcomes by using an explicit list of well defined complications.
- Establish a systematic informed peer review process utilizing a multidisciplinary method including prehospital care providers.
- The plan must include a method for computing survival probability and comparing patient outcomes. The standard outcome tool is TRISS and is already incorporated into the Montana Trauma Register.
- It is highly recommended that the plan incorporate autopsy information on all trauma patients. Complete anatomical diagnosis of injury is essential to the quality of trauma care.

Regional Trauma Advisory Committees

The Regional Trauma Hospitals will be responsible for overseeing the development and operation of the Regional Trauma Advisory Committees (RTAC). If there are two facilities designated as Regional Trauma Centers in a city, the two facilities must work collaboratively on the development and operation of the RTAC to assure its' success. It is anticipated that these meetings will be centrally located and conducted at least quarterly. The membership of the committee should be multidisciplinary to assure broad based support and input. As a minimum, RTAC membership should include one person (selected by each facility's trauma committee) from each designated trauma facility in the region. Because each RTAC will have issues unique to their region, additional membership may vary from region to region and may include the use of ad-hoc clinical consultants.

The authority for this committee is derived from the statewide EMS Council through the Trauma Advisory Committee (STAC). Each RTAC will elect representatives from the region to be seated on the STAC and thereby facilitate reporting of regional activities and evaluations of the trauma system.

Area Trauma Hospitals

To meet the unique needs of rural Montana, it is important to incorporate all facilities in trauma planning. An Area Trauma Hospital (ATH) is an acute care facility with the commitment, medical staff, personnel, and specialty training necessary to provide primary care to the trauma patient. Generally, an ATH is expected to provide initial resuscitation of the trauma patient and immediate operative intervention to control hemorrhage and to assure maximal stabilization prior to referral to a higher level of care. In many instances, patients will be maintained in the ATH unless the medical needs of the patient require secondary transfer. The decisions to transfer a patient rests with the physician attending the trauma patient. All ATH's will work collaboratively with the regional trauma center, community trauma hospitals and trauma receiving facilities to develop transfer protocols and a well-defined transfer sequence.

I. Hospital Organization

A. Trauma Program

The trauma program must be established and recognized by the medical staff and hospital administration. The trauma program must come under the overall organization and direction of a general surgeon who is trained, experienced and committed to the care of the injured person.

B. Trauma Program Director

The director must be a board certified surgeon with demonstrated competency in trauma care. The director will be responsible to develop a quality improvement process and through this process, will have responsibility for all trauma patients and administrative authority for the hospital's trauma program. The director must be given administrative support to implement the requirements specified by the State Trauma Plan and provide full coordination with the Department of Public Health and Human Services, Emergency Medical Services and Injury Prevention Section. The director is responsible to work with the credentialing process of the hospital and, in consultation with the appropriate service chiefs, recommend appointment and removal of physicians from the trauma team. It is strongly recommended that the director be an instructor in the American College of Surgeons Advanced Trauma Life Support (ATLS) course, maintain personal involvement in care of the injured, education in trauma care, and involvement in professional organizations.

C. Trauma Team

The team approach is optimal in the care of the multiply injured patient. There should be policies in place describing the role of all personnel on the trauma team. The composition of the trauma team in any hospital will depend on the characteristics of that hospital and its staff. The team leader must be a qualified surgeon who is clinically capable in all aspects of trauma care. Suggested composition of the trauma team may include:

- Nurses (ED, OR, ICU, etc.)
- Emergency Physicians
- Anesthesia
- Social Service/Pastoral Care
- Physician Specialists as dictated by clinical needs
- Respiratory Therapists
- Radiology Technician
- Laboratory Technician

D. Qualifications for Surgeons on the Trauma Team

As a general rule, all surgeons on the trauma team should be board certified in a surgical specialty recognized by the American Board of Medical Specialties, Canadian board, or other equivalent foreign board. However, it is understood that many boards require a practice period, and that complete certification may take three to five years after residency. If an individual has not been certified five years after successful completion of residency, that individual is ordinarily unacceptable for inclusion on the trauma team. The surgeons must participate in the Multidisciplinary Trauma Committee and the QI process.

All general surgeons participating on the Trauma Team must have completed an ATLS course and be involved in at least 10 hours of trauma-related CME annually. Over a three year period, one-half of these hours should be obtained outside the surgeon's own institution.

E. Trauma Coordinator

An Area Trauma Hospital must have a part-time (.5 FTE) dedicated registered nurse working in the role of a trauma coordinator. Working in conjunction with the trauma director, the trauma coordinator is responsible for organization of the program and all systems necessary for the multidisciplinary approach throughout the continuum of trauma care. She/he is responsible for coordinating optimal patient care for all injured victims. Suggested credentials for this person include: current RN licensure, Trauma Nurse Core Curriculum provider certification (or equivalent education) and participation in an ATLS course, demonstrated expertise in trauma care, five or more years clinical nursing experience, experience with hospital quality management

programs including a Trauma Register, experience in education program development, membership in professional organizations.

F. Multidisciplinary Trauma Committee

The purpose of the committee is to provide oversight and leadership to the entire trauma program. The major focus will be quality improvement activities, policy development, communication among all team members, development of standards of care, education and outreach programs and work with appropriate groups for injury prevention. Suggested membership for the committee includes representatives (if available in the community) from:

- Emergency Department
- Neurosurgery
- Pediatrics
- Intensive Care
- Administration
- Respiratory Therapy
- Laboratory
- Operating Room
- General Surgery
- Orthopedics
- Anesthesia
- Trauma Coordinator
- Radiology
- Rehabilitation
- Prehospital Care Providers

The clinical managers (or designee) of the departments involved with trauma care should play an active role with the committee.

II. Clinical Components

An Area Trauma Hospital must have the following medical specialists immediately available to the injured patient:

(A) Emergency Medicine
(B) Trauma/General Surgery[1]
(C) Anesthesia [2,3]

The following specialists should be on-call and promptly available from inside or outside the hospital:

- Internal Medicine
- Radiology

It is desirable to have the following specialists available to an Area Trauma Center:

- Cardiology
- Obstetrics/Gynecologic Surgery
- Orthopedic Surgery
- Pediatrics
- Urologic Surgery

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[1] The trauma surgeon on-call must be unencumbered and promptly available to respond to the trauma patient. Local criteria must be established to define conditions requiring the trauma surgeon's immediate hospital presence. The trauma surgeon's participation in major therapeutic decisions, presence in the emergency department for major resuscitation, and presence at operative procedures is mandatory. A system must be developed to assure early notification of the on-call surgeon and compliance with this criteria and their appropriateness must be documented and monitored by the QI process.

[2] Anesthesia must be promptly available with a mechanism established to ensure early notification of the on-call anesthesiologist. Local criteria must be established to determine when the anesthesiologist must be immediately available for airway emergencies and operative management. The availability of the anesthesiologist and the absence of delays in airway control or operative anesthesia must be documented and monitored by the QI process.

[3] May be provided by a CRNA under physician supervision. Local conditions must be established to determine when the CRNA must be immediately available for airway emergencies and operative management. The availability of the CRNA and the absence in delays in airway control or operative anesthesia must be documented and monitored by the QI process.

The staff specialist on-call will be notified at the discretion of the trauma surgeon and will be promptly available. This availability will be continuously monitored by the quality improvement program. The specialist involved for consultation to the trauma patient should be appropriately board certified and have an awareness of the unique problems of the trauma patients.

A general/trauma surgeon is presumed to be qualified and have privileges to provide thoracic surgical care to patients with thoracic injuries. If this is not the case, the facility should have a board certified thoracic surgeon available.

Policy and procedures should exist to notify the patient's primary physician of the patient's condition at an appropriate time.

III. Clinical Components

A. Emergency Department

The facility must have an Emergency Department staffed so that trauma patients are assured immediate and appropriate initial care. The emergency physician must be in-house 24 hours/day and immediately available at all times, capable of evaluating trauma patients, providing initial resuscitation, and performing necessary surgical procedures not requiring general anesthesia.

The Emergency Department Medical Director should be board certified in a specialty recognized by the American Board of Medical Specialists or a Canadian Board, or other equivalent foreign board and he/she should have completed an ATLS course. In general, the emergency medicine physicians participating on the trauma team should be board certified in a specialty recognized by the American Board of Medical Specialists, a Canadian board, or other equivalent foreign board. However, it is understood that many boards require a practice period, and the complete certification may take three to five years after residency. In an individual has not been certified five years after completion of a residency that individual is ordinarily unacceptable for inclusion on the trauma team. The emergency medicine physician participating with the trauma team must complete an ATLS course and participate in CME activities related to trauma care.

The emergency medicine physician will be responsible for activating the trauma team based on predetermined criteria. He/she will provide team leadership and care for the trauma patient until the arrival of the surgeon in the resuscitation area. The emergency department must have established standards and procedures to ensure immediate and appropriate care for the adult and pediatric trauma patient. The medical director for the department, or his designee, must participate with the Multidisciplinary Trauma Committee and the trauma QI process.

A-1. Personnel

Emergency nurses shall have special expertise in trauma care: Current RN licensure. It is highly recommended that emergency nurses successfully complete TNNC (or equivalent education), have evidence of continuing education in trauma nursing, and participation in the ongoing QI process of the trauma program. Adequate numbers of nurses must be available in-house 24 hours/day, staffing the Emergency Department to meet the needs of the trauma patient.

The surgeon is expected to make key decisions about management of the trauma patients care and determine if the patient needs transport to a higher level of care. If transfer is required, he/she is accountable to coordinate the process with the receiving surgeon at the receiving facility. If the patient is to be admitted to the ATH, he/she is the admitting physician and will coordinate the patient care while hospitalized. Guidelines should be written at the local level to determine which types of patients should be admitted to the ATH and which patents should be considered for transfer to a higher level of care.

It is highly desirable to have Orthopedic, Obstetric/Gynecologic Surgery, Cardiology, Ophthalmic Surgery, Pediatrics, Urologic Surgery, and Oral/Maxillofacial/Plastic Surgery coverage for the trauma patient in an Area Trauma Hospital. In the even that these specialties are not available, transfer protocols must be in place to facilitate the movement of the patent to a higher level of care.

B. Surgical Suites

The surgical team is not required to be in-house 24 hours/day. A team must be on-call with a well defined mechanism for notification to expedite admission to the operating room if the patient's condition warrants. The process must be constantly monitored by trauma QI program. Surgical nurses should have current RN licensure, be trained in principals of resuscitation, mechanism of injury theory, poly trauma, and knowledge of surgical instrumentation. The surgical nurses are an integral member of the trauma team and, as such, must participate in the on-going quality improvement process of the trauma program and must be represented on the Multidisciplinary Trauma Committee.

B-1. Policy and Procedure:

Policy and procedure must be in place for the following:

1. Prioritized operating room availability for the emergent trauma patient during a busy operative schedule.

2. Notification of "on-call" surgical teams for both single and multiple patient admissions.

3. Guidelines for managing death in the operating room and organ procurement.

4. Guidelines for preservation of evidence.

5. Policy for patient monitoring by an RN while the patient is in transport to the Radiology Suite or Intensive Care Unit from the Operating Suite.

6. Policy for immediate access of blood and blood products to the Operating Suite.

B-2. Anesthesia

Anesthesia must be promptly available with a mechanism established to ensure early notification of the on-call anesthesiologist. The Area Trauma Hospital must document conditions when the anesthesiologist must be immediately available for airway emergencies and operative management of the trauma patient. Anesthesia coverage may be provided by a CRNA under physician supervision. Local conditions must be established to determine when the CRNA must be immediately available for airway emergencies and operative management. The availability of the anesthesiologist and the absence of delays in airway control or operative anesthesia must be documented and monitored by the QI process. The anesthesiologist/CRNA must have the necessary educational background in the care of the trauma patient, participate in the Multidisciplinary Trauma Committee and the trauma QI process.

C. Intensive Care Unit

The Area Trauma Hospital shall have an Intensive Care Unit (ICU). Additionally, the ICU shall have:

C-1. Medical Director

The Medical Director for the Intensive Care Unit is responsible for the quality of care and administration of the ICU. In a mixed ICU, the Trauma Program Director, or his designee, will work collaboratively with the ICU Medical Director to set policy and establish standards of care to meet the unique needs of the trauma patient. Ideally, the surgeon will have received critical care training during residency or fellowship and must have expertise in the post injury care of the trauma patient. This expertise may be demonstrated by any of the following: Certificate of Added Qualifications in Surgical Care from the Board of Surgery, or documentation that in the previous 12 months there was active participation by the individual in the ICU administration and quality improvement process and direct involvement in the ICU care of trauma patients.

C-2. Physician Coverage

Trauma patients admitted to the ICU will be admitted under the care of a general surgeon. Guidelines may be written for the rare exception to this rule (i.e. isolated head injury that the neurosurgeon agrees to manage). In addition to overall responsibility for patient care by the primary surgeon, there must be an in-house physician coverage for the ICU at all times. This coverage may be provided by a physician who is credentialed by the hospital and the medical director of the ICU in critical care. This coverage is clearly for emergencies only (i.e. an unexpected extubation of an ICU patient) and is to ensure the patient's immediate needs are met while the primary surgeon is contacted.

C-3. Nursing Personnel

Area Trauma Hospitals should provide staffing in sufficient numbers to meet the needs of the trauma patient. Critical care nurses must have current RN licensure and should show evidence of completion of a structured ICU inservice program which includes didactic and clinical content related to the care of the trauma patient. ICU nurses are an integral part of the trauma team and, as such, should be represented on the Multidisciplinary Trauma Committee and participate in the QI process of the trauma program.

D. Post Anesthesia Recovery Room

An Area Trauma Hospital should have a PAR staff on-call 24 hours/day and available to the post-operative trauma patient. Frequently, it is advantageous to bypass the PAR and directly admit to the ICU. In this instance, these requirements may be met by the ICU.

D-1. Nursing Personnel

PAR nurses must have current RN licensure. The nurses should show evidence of completion of a structured inservice program which includes didactic and clinical content related to the care of the trauma patient. PAR nurses are an integral part of the trauma team and, as such, should be represented on the Multidisciplinary Trauma Committee and participate in the QI process of the trauma program.

PAR staffing should be in sufficient numbers to meet the critical needs of the trauma patient.

III. Clinical Support Services

A. Radiological Services

In addition to hospital licensure requirements, an Area Trauma Hospital shall have the following service capabilities:

A board certified radiologist must be available to the facility for emergency procedures and on a routine basis to assure quality of services rendered. The radiologist is a key member of the trauma team and should be represented on the Multidisciplinary Trauma Committee. A certified radiological technician should be in-house 24 hours/day available to meet the immediate needs of the trauma patient. The CT technician may be on-call from home with a mechanism in place to assure the technician is available. The quality assurance process must verify the procedure is promptly available to the patient.

B. Clinical Laboratory Services

The standards for clinical laboratory services in an ATH facility differ very little from those of a RTC. Comprehensive blood bank or access to community central blood bank facilities must be available. Toxicology studies may be performed off site if necessary.

The clinical laboratory service shall have the following services available 24 hours/day:

1. Access to a community central blood bank and adequate storage facilities.

2. Standard analysis of blood, urine and other body fluids.

3. Blood gas and pH determinations (this function may be performed by services other than the clinical laboratory service, when applicable).

4. Alcohol screening is required and drug screening is highly recommended.

Sufficient numbers of clinical laboratory technologists shall be in-house 24 hours/day and promptly available at all times.

C. Social Service/Pastoral Care Support

The nature of traumatic injury requires that the psychological needs of the patient and family are considered and addressed in the acute stages of injury and throughout recovery. An Area Trauma Hospital may utilize community resources as appropriate to meet the needs of the trauma patient.

D. Rehabilitation

The rehabilitation of the trauma patient and the continued support of the family members is an important part of the trauma system. There are no free-standing rehabilitation hospitals in the State of Montana. However, there are many excellent approved in-patient programs in the State. Each facility will be required to address a plan for integration of rehabilitation into the acute and primary care of the trauma patient, at the earliest stage possible after admission to the trauma center. Designated hospitals will be required to identify a mechanism to initiate rehabilitation services and/or consultation upon admission as well as policies regarding coordination of the Multidisciplinary Rehabilitation Team. Policies must be in place to address the coordination of transfers between acute care facilities and rehabilitation facilities. Transfer agreements should include a feedback mechanism for the acute care facilities to update the healthcare team on the patients progress and outcome for inclusion in the Trauma Register.

E. Outreach

Area Trauma Hospitals must work cooperatively with the RTAC to develop and implement an outreach program for Community Trauma Hospitals and Trauma Receiving Facilities in the region. The Area Trauma Hospital will work collaboratively to plan, facilitate and teach professional education programs for the

prehospital care providers, nurses and physicians in the Community Trauma Hospitals and Trauma Receiving Facilities in their region.

F. Prevention/Public Education

The Area Trauma Hospital is responsible to work with the RTAC to develop education and prevention programs for the public and professional staff. The plan must include implementation strategies to assure information dissemination to all residents in the region.

G. Transfer Protocols

The facilities will have transfer protocols in place with Regional Trauma Centers as well as all specialty referral centers (i.e. burn, pediatrics and rehabilitation). Transfer protocols must be written with Community Trauma Hospitals and Trauma Receiving Facilities in the immediate service area. All facilities will work together to develop transfer guidelines indicating which patients should be considered for transfer and procedures to assure the most expedient, safe transfer of the patient. The transfer guidelines need to assure feedback as provided to the facilities and assure this information eventually becomes part of the Trauma Register.

H. Quality Improvement/Evaluation

A key element in trauma system planning is evaluation. All trauma facilities will be required to participate in the Trauma Register and submit data to the EMS & IP Section as requested. The Area Trauma Hospitals will be responsible to assist the Community Trauma Hospitals and Trauma Receiving Facilities in establishing the data collection process and, if necessary, provide data entry into the register from abstracted patient records. The facility must be committed to the RTAC and participate actively in the process to assure coordination of quality care, education, facilitate policy development and develop public education and awareness.

Each Trauma Center must develop an internal Quality Improvement plan that minimally addresses the following key components:

- An organizational structure which facilitates the process of quality improvement (Multidisciplinary Trauma Committee).
- Clearly stated goals and objectives of the quality improvement plan.
- The development of standards of care.
- A process to delineate privileges for all physicians participating in trauma care.
- Participation in the statewide Trauma Register.

- Established quality indicators (audit filters). The plan must include, minimally, the recommended audit filters by the ACS and the JCAHO. The plan should define adverse outcomes by using an explicit list of well defined complications.
- Establish a systematic, informed peer review process utilizing a multidisciplinary method including prehospital care providers.
- The plan must include a method for computing survival probability and comparing patient outcomes. The standard outcome tool is TRISS and is already incorporated into the Montana Trauma Register.
- It is highly recommended that the plan incorporate autopsy information on all trauma patients. Complete anatomical diagnosis of injury is essential to the quality of trauma care.

Community Trauma Hospitals

Community Trauma Hospitals (CTH) are generally small, rural facilities with a commitment to the resuscitation of the trauma patient and written transfer protocols in place to assure those patients who require a higher level of care are appropriately transferred for definitive care. These facilities are generally not staffed by an in-house physician but rather have a qualified physician, on-call from outside the facility. A system for early notification of the physician on-call must be developed so that he/she can be present at the time of arrival of the trauma patient in the emergency department 95% of the time. This level of designation requires a general/trauma surgeon on-call and promptly available to respond to the trauma patient. However, this level contemplates there may be only one surgeon in the community and he/she may not be available at all times. During these periods when the surgeon is not available, the hospital must notify other facilities who routinely transfer/refer patients to the Community Trauma Hospital for emergency surgical services.

Since this level contemplates a surgeon in the community who is committed to trauma care, it is anticipated that the Community Trauma Hospital should provide initial resuscitation, immediate operative intervention to control hemorrhage to assure maximal stabilization prior to transfer to a higher level of care. In many instances patients will be maintained in the Community Trauma Hospital unless the medical needs of the patient require secondary transport. The decision to transfer a patient rests with the physician attending the trauma patient.

An institution intending to provide prolonged ventilatory care must assure that a physician qualified to provide ventilatory care is available at all times. If physician support is not available 24 hours/day, transfer to a higher level of care is recommended.

I. Hospital Organization

A. Trauma Program

The trauma program must be established and recognized by the medical staff and hospital administration. The trauma program must come under the overall organization and direction of a general surgeon who is trained, experienced and committed to the care of the injured person.

B. Trauma Program Director

The director must be a board certified surgeon with demonstrated competency in trauma care. The director will be responsible to develop a quality improvement process and, through this process, will have responsibility for all trauma patients and administrative authority for the hospital's trauma program. The director must be given administrative support to implement the requirements specified by the State Trauma Plan and provide full coordination with the Department of Public Health & Human Services, Emergency Medical Services and Injury Prevention Section. The director is responsible to work with the credentialing process of the hospital and, in consultation with the appropriate service chiefs, recommend appointment and removal of physicians from the trauma team. It is strongly recommended that the director be an instructor in the American College of Surgeons Advanced Trauma Life Support (ATLS) course, maintain personal involvement in care of the injured, education in trauma care, and involvement in professional organizations. The director should be involved in at least 10 hours of trauma-related CME annually. Over a three year period, half of these hours should be obtained outside the surgeon's own institution.

C. Trauma Team

The team approach is optimal in the care of the multiply injured patient. There should be policies in place describing the role of all personnel on the trauma team. The composition of the trauma team in any hospital will depend on the characteristics of that hospital and it's staff. The team leader must be a qualified surgeon who is clinically capable in all aspects of trauma care. Suggested composition of the trauma team may include:

- Nurses, ED, OR, ICU, etc.
- Radiology Technician
- Laboratory Technician
- Respiratory Therapists
- Anesthesia
- Social Services/Pastoral Care
- Physician Specialists as dictated by clinical needs.

D. Trauma Coordinator

A Community Trauma Hospital must have a part-time dedicated registered nurse working in the role of a trauma coordinator (A hospital that is committed to trauma care will usually require a 1/2 time person to fulfill this commitment). Working in conjunction with the trauma director, the trauma coordinator is responsible for organization of the program and all systems necessary for the multidisciplinary approach throughout the continuum of trauma care. She/he is responsible for coordinating optimal patient care for all injured victims. Suggested credentials for this position include: current RN licensure, TNCC provider certification (or

equivalent education) and participation in an ATLS course, demonstrated expertise in trauma care and five or more years clinical nursing experience.

E. Multidisciplinary Trauma Committee

The purpose of the Committee is to provide oversight and leadership to the entire trauma program. The major focus will be quality improvement activities, policy development, communication among all team members, development of standards of care, education and outreach programs and work with appropriate groups for injury prevention. Suggested membership for the Committee include representatives (if available in the community from:

- Emergency Department
- Pediatrics
- Intensive Care
- Administration
- Respiratory Therapy
- Laboratory
- Anesthesia
- General Surgery
- Trauma Coordinator
- Radiology
- Rehabilitation
- Prehospital Care Providers

II. Facility Standards

A. Emergency Department

The facility must have an emergency department staffed so that trauma patients are assured immediate and appropriate initial care. Community Trauma Hospitals may not have a physician in the emergency department 24 hours/day. Therefore, adequate trained nursing personnel must be available. Local policy must be written to assure early notification of the on-call physician and/or surgeon to meet the trauma patient in the emergency department.

The emergency department will have a designated medical director who is board certified in a specialty recognized by the American Board of Medical Specialties or a Canadian board. All physicians covering the emergency department must have successfully completed an ATLS course and should show commitment to trauma care by maintaining competency in resuscitation, airway management, central venous access, cervical immobilization and long bone fracture stabilization of the adult and pediatric trauma patient. The physicians participating on the trauma team must participate in CME activities related to trauma care, the Multidisciplinary Trauma Committee and the trauma QI process.

A-1. Nursing Personnel

Emergency nurses shall have special expertise in trauma care and maintain a current RN licensure. It is highly recommended that emergency nurses

successfully complete TNCC (or equivalent education), evidence of continuing education in trauma nursing, and participation in the ongoing QI process of the trauma program.

Adequate numbers of nurses must be available in-house 24 hours/day staffing the emergency department to meet the needs of the trauma patient.

A-2. General/Trauma Surgeon

A general/trauma surgeon must be available on-call 24 hours/day to respond to the emergency department as requested. This level contemplates a community where only one surgeon may reside. During those periods when the surgeon is not available, the hospital must notify other facilities who routinely transfer/refer patients to the Community Trauma Hospital for emergency surgical care. The trauma surgeon on-call must be promptly available to respond to the trauma patient. Local criteria must be established to define conditions requiring the trauma surgeon's immediate hospital presence. The trauma surgeon's participation in major therapeutic decisions, presence in the emergency department for major resuscitation, and presence at operative procedures is mandatory. A system must be developed to assure early notification of the on-call surgeon and compliance with this criteria and their appropriateness must be monitored by the hospital's trauma QI process.

The surgeon is expected to make key decisions about management of the trauma patient's care and determine if the patient needs transport to a higher level of care. If transfer is required, he/she is accountable to coordinate the process with the receiving surgeon at the receiving facility. If the patient is to be admitted to the CTH, he/she is the admitting physician and will coordinate the patient care while hospitalized. Guidelines should be written at the local level to determine which types of patients should be admitted to the CTH and which patients should be considered for transfer to a higher level of care. It is highly desirable to have Internal Medicine, Orthopedic Surgery, Obstetric/Gynecologic Surgery and Radiology coverage for the trauma patient in a Community Trauma Hospital. In the event that these specialties are not available, transfer protocols must be in place to facilitate the movement of the patient to a higher level of care.

B. Surgical Suites

The surgical team is not required to be in-house 24 hours/day. A team must be on-call with a well defined mechanism for notification to expedite admission to the operating room if the patient's condition warrants. This process must be constantly

monitored by the trauma QI program. Surgical nurses should have current RN licensure, be trained in principles of resuscitation, mechanism of injury theory, poly-trauma, and knowledge of surgical instrumentation. The surgical nurses are an integral member of the trauma team and, as such, must participate in the on-going QI process of the trauma program and must be represented on the Multidisciplinary Trauma Committee.

B-1. Policy and Procedure

Policy and procedure must be in place for the following:

1. Prioritized hospital room availability for the emergency trauma patient.

2. Notification of "on-call" surgical teams.

3. Guidelines for managing death in the OR and organ procurement.

4. Guidelines for preservation of evidence.

5. Policy for patient monitoring by an RN while the patient is in transport to the Radiology Suite or Intensive Care Unit from the operating suite.

6. Policy for immediate access of blood and blood products to the operating suite.

B-2. Anesthesia

Anesthesia must be promptly available with a mechanism established to ensure early notification of the on-call anesthesiologist/CRNA. Anesthesia coverage may be provided by a CRNA under physician supervision. The Community Trauma Hospital must document conditions when the anesthesiologist/CRNA must be immediately available for airway emergencies and operative management of the trauma patient. The availability of the anesthesiologist and the absence of delays in airway control or operative anesthesia must be documented and monitored by the QI process.

C. Intensive Care Unit

An institution intending to provide prolonged ventilatory care must assure that a physician qualified to provide ventilatory care is available at all times. If physician support is not available 24 hours/day, transfer to a higher level of care is recommended.

The Community Trauma Hospital shall have an Intensive Care Unit (ICU) which meets the requirements of licensure in the State of Montana. Additionally the ICU shall have:

C-1. Medical Director

The medical director for the ICU is responsible for the quality of care and administration of the ICU. In a mixed ICU, the Trauma Program Director will set policy and establish standards of care to meet the unique needs of the trauma population. Ideally, the surgeon will have received critical care training during residency or fellowship and must have expertise in the post injury care of the trauma patient. This expertise may be demonstrated by any of the following. Certificate of Added Qualifications in Surgical Care from the Board of Surgery, or documentation that in the previous 12 months there was active participation by the individual in the ICU administration and quality improvement process and director involvement in the ICU care of trauma patients.

C-2. Physician Coverage

Trauma patients admitted to the ICU will be admitted under the care of a general surgeon. In addition to overall responsibility for patient care by the primary surgeon, there must be physician coverage for the ICU at all times. It is anticipated that this coverage will be provided by the primary surgeon but it may be a physician who is credentialed by the hospital and the director of the ICU in critical care. The physician on-call must be promptly available to respond to the trauma patient in the ICU. Local criteria must be established to define conditions requiring the trauma surgeon's immediate hospital presence. Compliance with this criteria and their appropriateness must be documented and monitored by the QI process.

C-3. Nursing Personnel

Community Trauma Hospitals should provide staffing in sufficient numbers to meet the needs of the trauma patient. Critical care nurses must have current RN licensure. The nurses should show evidence of completion of a structured ICU inservice program which includes didactic and clinical content related to the care of the trauma patient. ICU nurses are an integral part of the trauma team and, as such, should be represented on the Multidisciplinary Trauma Committee and participate in the QI process of the trauma program.

D. Post Anesthesia Recovery Room

In addition to licensure requirements for the State of Montana, a Community Trauma Hospital should have a PAR staff on-call 24 hours/day and available to the post-operative trauma patient. Frequently, it is advantageous to bypass the PAR and directly admit to the ICU. In this instance, these requirements may be met by the ICU.

D-1. Nursing Personnel

PAR nurses must have current RN licensure. The nurses should show evidence of completion of a structured inservice program which includes didactic and clinical content related to the care of the trauma patient. PAR nurses are an integral part of the trauma team and, as such, should be represented on the Multidisciplinary Trauma Committee and participate in the QI process of the trauma program.

PAR staffing should be in sufficient numbers to meet the critical needs of the trauma patient.

III. Clinical Support Services

In addition to licensure requirements, a CTH must have the following service capabilities:

A. Radiology Services

It is highly desirable for a Community Trauma Hospital to have a board certified radiologist available to the facility for emergency procedures, and on a routine basis, to assure quality of services rendered. The radiologist is a key member of the trauma team and should be represented on the Multidisciplinary Trauma Committee. A certified radiological technician should be in-house 24 hours/day available to meet the immediate needs of the trauma patient. The CT technician may be on-call from home with a mechanism in place to assure the technician is available. The quality assurance process must verify the procedure is promptly available to the patient.

B. Clinical Laboratory Services

The standards for clinical laboratory services in CTH facilities differ very little from other trauma facilities. Blood banking facilities or access to community facilities must be available. Toxicology studies may be performed off site if necessary.

The clinical laboratory service shall have the following services available 24 hours/day:

1. Access to a community central blood bank and adequate storage facilities.

2. Standard analysis of blood, urine and other body fluids.

3. Blood gas and pH determinations (this function may be formed by services other than the clinical laboratory service, when applicable).

4. Alcohol screening is required and drug screening is highly recommended.

Sufficient numbers of clinical laboratory technologists shall be promptly available 24 hours/day. If this requirement is fulfilled by technicians not in-house, quality improvement must document and monitor the availability of testing, blood access and the prompt recording of accurate results.

C. Social Service/Pastoral Care

Social service support is vital to the trauma patient and family. A Community Trauma Hospital may utilize community resources as appropriate to meet the needs of the trauma patient.

D. Rehabilitation

The rehabilitation of the trauma patient and the continued support of the family members is an important part of the trauma system. There are no free-standing rehabilitation hospitals in the State of Montana. However, there are many excellent approved in-patient programs in the State. Each facility will be required to address a plan for integration of rehabilitation into the acute and primary care of the trauma patient, at the earliest stage possible after admission to the trauma center. Designated hospitals will be required to identify a mechanism to initiate rehabilitation services and/or consultation upon admission as well as policies regarding coordination of the Multidisciplinary Rehabilitation Team. Policies must be in place to address the coordination of transfers between acute care facilities and rehabilitation facilities. Transfer agreements should include a feedback mechanism for the acute care facilities to update the healthcare team on the patients progress and outcome for inclusion in the Trauma Register.

E. Outreach

Community Trauma Hospitals must work cooperatively with the RTAC to develop and implement an outreach program for Trauma Receiving Facilities in the region. The Community Trauma Hospital will work collaboratively to plan, facilitate and teach professional education programs for the prehospital care providers, nurses and physicians in the Community Trauma Hospitals and Trauma Receiving Facilities in their region.

F. Prevention/Public Education

The Community Trauma Hospital is responsible to work with the RTAC to develop education and prevention programs for the public and professional staff. The plan must include implementation strategies to assure information dissemination to all residents in the region.

G.Transfer Protocols

The facilities will have transfer protocols in place with Regional Trauma Centers, Area Trauma Hospitals and Trauma Receiving Facilities in the region as well as all specialty referral centers (i.e. burn, pediatrics and rehabilitation). All facilities will work together to develop transfer guidelines indicating which patients should be considered for transfer and procedures to assure the most expedient, safe transfer of the patient. The transfer guidelines need to assure feedback is provided to the facilities and assure this information eventually becomes part of the Trauma Register.

H. Quality Improvement/Evaluation

A key element in trauma system planning is evaluation. All trauma facilities will be required to participate in the Trauma Register and submit data to the EMS & IP Section as requested. The Community Trauma Hospitals will be responsible to assist the Trauma Receiving Facilities in establishing the data collection process and, if necessary, provide data entry into the Register from abstracted patient records. The facility must be committed to the RTAC and participate actively in the process to assure coordination of quality care, education, facilitate policy development and develop public education and awareness.

Each Trauma Center must develop an internal Quality Improvement (QI) plan that minimally address the following key components:

- An organization structure which facilitates the process of quality improvement (Multidisciplinary Trauma Committee).
- Clearly stated goals and objectives of the quality improvement plan.
- The development of standards of care.
- A process to delineate privileges for all physicians participating in trauma care.
- Participation in the statewide Trauma Register.
- Established quality indicators (audit filters). The plan must include, minimally, the recommended audit filters by the ACS and the JCAHO. The plan should define adverse outcomes by using an explicit list of well defined complications.
- Establish a systematic informed peer review process utilizing a multidisciplinary method including prehospital care providers.
- The plan must include a method for computing survival probability and comparing patient outcomes. The standard outcome tool is TRISS and is already incorporated into the Montana Trauma Register.
- It is highly recommended that the plan incorporate autopsy information on all trauma patients. Complete anatomical diagnosis of injury is essential to the quality of trauma care.

Trauma Receiving Facilities

Trauma Receiving Facilities (TRF) are generally licensed, small, rural facilities with a commitment to the resuscitation of the trauma patient and written transfer protocols in place to assure those patients who require a higher level of care are appropriately transferred for definitive care. These facilities may not be staffed by a physician but, rather, may be staffed by a licensed mid-level practitioner (i.e. nurse practitioner or physician's assistant). The major trauma patient would be resuscitated and transferred to a higher level of care from the emergency department. This categorization does not contemplate the availability of surgeons, operating rooms nor intensive care services.

I. Hospital Organization

A. Trauma Program

There must be a commitment on behalf of the entire facility to organization of trauma care. A trauma program must be established and recognized by the institution. The trauma program must come under the overall organization of a physician who is committed and willing to provide off-line administration of the program.

B. Trauma Program Director

There must be a qualified physician director of the trauma program. In this instance the physician is responsible to work with all members of the trauma team, to work with the RTAC process and to develop a quality improvement process for the facility. Through this process, he/she must have overall responsibility for the quality of trauma care rendered at the facility. The director must be given administrative support to implement the requirements specified by the State Trauma Plan and provide full coordination with the Department of Public Health & Human Services, Emergency Medical Services and Injury Prevention Section. The director must assist in the development of standards of care and assure appropriate policies and procedures are in place for the safe resuscitation and transfer of trauma patients. The physician director must have completed an ATLS course and participate in CME related to trauma care.

C. Trauma Team

The team approach is optimal in the care of the multiply injured patient. There should be policies in place describing the role of all personnel on the trauma team. The composition of the trauma team in any facility will depend on the characteristics of the facility and its staff. The team leader must be a qualified physician or a qualified midlevel practitioner. Qualified physicians or midlevel practitioners directing the resuscitation of trauma patients must have successfully completed an ATLS course and must show commitment to trauma care by maintaining competence in airway management, central venous access, cervical immobilization, and long bone fracture stabilization. Suggested composition of the trauma team may include:

- Nurses
- Physicians
- Laboratory Technician
- Respiratory Therapists
- Radiology Technicians
- Social Services/Pastoral Care

D. Trauma Coordinator

A Trauma Receiving Facility must have a person to act as a liaison to the RTAC process and conduct many of the administrative functions required by the trauma program. Specifically, this person is responsible, with the physician director, to coordinate optimal patient care for all injured victims. There are many requirements for data coordination, quality improvement, education and prevention activities incumbent upon this position.

E. Multidisciplinary Trauma Committee

The purpose of the Committee is to provide oversight and leadership to the entire trauma program. The major focus will be quality improvement activities, policy development, communication among all team members, development of standards of care, education and outreach programs and work with appropriate groups for injury prevention. In a Trauma Receiving Facility this does not need to be a separate distinct body; however, the functions of this Committee may be performed in conjunction with other on-going committees in the facility.

Suggested membership for the Committee includes representatives (if available in the community) from:

- Emergency Department
- Pediatrics
- Trauma coordinator
- Administration
- Radiology
- Rehabilitation
- Prehospital Care Providers
- Laboratory
- Respiratory Therapy

The clinical managers, or designee, of the department involved with trauma care should play an active role with the committee.

II. Facility Standards

A. Emergency Department

The facility must have an emergency department staffed so that trauma patients are assured immediate and appropriate initial care. It is not anticipated that a physician will be available on-call to an emergency department in a trauma receiving facility. This requirement may be met by a qualified midlevel practitioner on-call from outside the facility. A system must be developed to assure early notification of the on-call practitioner. Compliance with this criteria must be documented and monitored by the QI process.

The TRF must have a written policy for notification and mobilization of an organized trauma team. Additionally, written policy shall be in place for pre-activation of the transfer team from the field based on prehospital triage criteria. There must be written transfer protocols with other trauma facilities in the region. A policy must be in place to facilitate and expedite the transfer sequence to assure the most appropriate care is rendered. Protocols must be in place for specialty referral for pediatrics, burn, spinal chord and rehabilitation.

A-1. Nursing Personnel

Emergency nurses shall have special expertise in trauma care and maintain a current RN licensure. It is highly recommended that emergency nurses successfully complete TNCC (or equivalent education), evidence of continuing education in trauma nursing and participation in the ongoing QI process of the trauma program.

Adequate numbers of nurses must be available to meet the needs of the trauma patient.

III. Clinical Support Services

In addition to licensure requirements, a Trauma Receiving Facility must have the following service capabilities:

A. Radiology Services

X-ray capabilities must be immediately available 24 hours/day to meet the resuscitative needs of the trauma patient. A certified radiological technician should be available to meet the immediate needs of the trauma patient. The technician may be on-call from home with a mechanism in place to assure the technician is available. The quality assurance process must document and monitor the process that the film is promptly available to the patient.

B. Clinical Laboratory Services

Clinical laboratory services must be immediately available to the trauma patient. It is not anticipated that blood banking facilities be available; rather, access and blood storage capabilities. Toxicology studies may be performed off site if necessary. The clinical laboratory service shall have the following services available 24 hours/day:

1. Access to a community central blood bank and adequate storage facilities.

2. Standard analysis of blood, urine and other body fluids.

If this requirement is fulfilled by technicians not in-house, quality improvement must document and monitor the availability of testing, blood access and the prompt recording of accurate results.

C. Social Service/Pastoral Care

Social service support is vital to the trauma patient and family. A Trauma Receiving Facility may utilize community resources as appropriate to meet the needs to the trauma patient.

D. Prevention/Public Education

The RTF is responsible to work with RTAC to develop education and prevention programs for the public and professional staff. The plan must include implementation strategies to assure information dissemination to all residents in the region.

E. Transfer Protocols

Transfer protocols must be written with Regional Trauma Centers, Area Trauma Hospitals or Community Trauma hospitals and appropriate specialty referral centers (i.e. burn, pediatrics and rehabilitation). All facilities will work together to develop transfer guidelines indicating which patients should be considered for transfer and procedures to assure the most expedient, safe transfer of the patient. The transfer guidelines need to assure feedback is provided to the facilities and assure this information eventually becomes part of the Trauma Register.

F. Quality Improvement/Evaluation

A key element in trauma system planning is evaluation. All trauma facilities will be required to participate in the Trauma Register and submit data to the EMS & IP Section as requested. The Regional Trauma Centers, Area Trauma Hospitals and Community Trauma Hospitals will be responsible to assist the Trauma Receiving Facilities in establishing the data collection process and, if necessary, provide data entry into the Register from abstracted patient records. The facility must be committed to the RTAC and participate actively in the process to assure coordination of quality care education, facilitate policy development and develop public education and awareness.

Montana Trauma Hospital Criteria

The following table shows levels of designation and their essential (E) or desirable (D) characteristics. For the purpose of categorizing service capabilities, trauma facilities will be known as Regional Trauma Centers (RTC), Area Trauma Hospitals (ATH), Community Trauma Hospitals (CTH), and Trauma Receiving Facilities (TRF).

		RTC	ATH	CTH	TRF
A.	**HOSPITAL ORGANIZATION**				
1.	Trauma Service	E	E	D	--
2.	Trauma Program Director	E	E	E	E
3.	Trauma Multidisciplinary Committee	E	E	E	E
4.	Hospital Departments/Divisions/Sections				
	Surgery	E	E	E	--
	Neurologic Surgery	D	--	--	--
	Orthopedic Surgery	D	--	--	--
	Emergency Medicine	E	D	D	D
	Anesthesia	D	D	D	--
	Pediatrics	E	D	--	--
B.	**CLINICAL CAPABILITIES**				
1.	Specialty Availability				
	In-House 24 Hours/Day:				
	Emergency Medicine	E	E	E[1]	--
2.	On-call and promptly available:				
	Anesthesiology	E[2]	E[2,3]	E[2,3]	--
	Cardiac Surgery	D	--	--	--
	Cardiology	E	D	--	--
	Emergency Medicine	--	--	--	E[4]
	Hand Surgery	D	--	--	--
	Infectious Disease	D	--	--	--
	Internal Medicine	E	E	D	--
	Microvascular Surgery (replant/flaps)	D	--	--	--
	Neurologic Surgery	E	--	--	--
	Obstetric/Gynecologic Surgery	E	D	D	--
	Ophthalmic Surgery	E	--	--	--
	Oral/Maxillofacial/Plastic Surgery	E	--	--	--
		RTC	**ATH**	**CTH**	**TRF**

Orthopedic Surgery	E	D	D	--
Pediatrics	E	D	--	--
Pediatric Surgery	D	--	--	--
Pulmonary/Intensive Care Medicine	E	--	--	--
Radiology	E	E	D	D
Trauma/General Surgery	E[5]	E[5]	E[6]	D
Thoracic Surgery	E	--	--	--
Urologic Surgery	E	D	--	--
Vascular Surgery	E	--	--	--

C. FACILITIES/RESOURCES/CAPABILITIES

1. Emergency Department (ED)				
a. Personnel				
1. Designated physician director	E	E	E	E
2. Physician who has special competence in care of critically injured, ATLS trained and who is a designated member of the trauma team and is in house and immediately available to the ED 24 hours/day.	E	E	E[1]	--
3. Nursing personnel with special capability in trauma care who provide continual monitoring of the trauma patient from hospital arrival to disposition in ICU, OR, ward or transfer to another facility.	E	E	E	E
b. Equipment for resuscitation for patients of **all ages** shall include but not be limited to:				
1. Airway control and ventilation equipment including laryngoscope and endotracheal tubes of all sizes, bag-mask resuscitator, pocket masks, and oxygen	E	E	E	E

		RTC	ATH	CTH	TRF
2.	Pulse oximetry	E	E	E	D
3.	End-tidal CO_2 determination	E	E	E	E
4.	Suction devices	E	E	E	E
5.	electrocardiograph-oscilloscope-defibrillator	E	E	E	E
	Internal paddles	E	E	E	--
6.	Apparatus to establish central venous pressure monitoring	E	E	E	D
7.	Standard intravenous fluids and administration devices, including large bore intravenous catheters	E	E	E	E
8.	Sterile surgical sets for				
	a. Airway control/Cricothyrotomy	E	E	E	E
	b. Thoracotomy	E	E	E	--
	c. Vascular access	E	E	E	E
	d. Chest decompression	E	E	E	E
	e. Peritoneal lavage	E	E	E	D
9.	Gastric decompression	E	E	E	E
10.	Drugs necessary for emergency care	E	E	E	E
11.	X-ray availability 24 hour/day	E	E	E	E
12.	Two-way communication with vehicles of emergency transport system	E	E	E	E
13.	Skeletal traction devices including capability for cervical traction	E	E	E	D
14.	Arterial catheters	E	E	E	--
15.	Thermal control equipment				
	a. For patient	E	E	E	E
	b. For blood and fluids	E	E	E	D
16.	Vascular Doppler	E	E	E	D
17.	Rapid infuser system	E	E	D	--
18.	Protective equipment	E	E	E	E
2.	Operating Suite				
a.	Personnel				
	Operating room adequately staffed in house and available 24 hours a day	E[7]	D	D	--

	RTC	ATH	CTH	TRF
b. Equipment for all ages shall include but not be limited to:				
1. Cardiopulmonary bypass capability	D	--	--	--
2. Operating microscope	D	--	--	--
3. Thermal control equipment				
a. for patient	E	E	E	--
b. for blood and fluids	E	E	E	--
4. X-ray capability including c-arm image intensifier 24 hours/day	E	D	D	--
5. Endoscopes, bronchoscope	E	D	D	--
6. Craniotomy instruments	E	E	--	--
7. Equipment appropriate for fixation of long bone and pelvic fractures.	E	D	D	--
8. Rapid Infuser System	E	D	D	--
9. Cell Saver/Autotransfusor	E	D	D	--
10. Peritoneal Lavage equipment	E	E	E	--
3. Postanesthetic recovery room (surgical intensive care unit is acceptable)				
a. Registered nurses and other essential personnel 24 hours/day	E	E	E	--
b. Equipment of the continuous monitoring of temperature, hemodynamics and gas exchange	E	E	E	--
c. Equipment for the continuous monitoring of intracranial pressure.	E	--	--	--
d. Pulse oximetry	E	E	E	--
e. End-tidal CO^2 determination	D	D	D	--
f. Thermal control	E	E	E	--
4. Intensive Care Units (ICUs) for trauma patients				
a. Personnel				
1. Designated surgical director of trauma patients	E	E	E	--
2. Physician, credentialed by the hospital in critical care and approved by the trauma director, immediately able in-house to respond to the ICU patient 24 hours/day	E	E	E[8]	--

		RTC	ATH	CTH	TRF
	b. Equipment				
	1. Appropriate monitoring and resuscitation equipment	E	E	E	--
	c. Support Services				
	1. Immediate access to clinical diagnostic services.	E	E	E	--
5.	Acute hemodialysis capability or transfer protocol	E	--	--	--
6.	Organized burn care Physician-directed burn center staffed by nursing personnel trained in burn care and equipped properly for care of the extensively burned patient OR Transfer protocol with burn center.	E	E	E	E
7.	Acute spinal cord/brain injury management capacity In circumstances in which an approved brain injury center exists in the region, transfer should be considered in selected patients; transfer protocols should be in effect. AND In circumstances in which an approved brain injury center exists in the region, transfer should be considered in selected patients; transfer protocols should be in effect.	E	E	E	E
8.	Radiological special capabilities (available 24 hours/day)				
	a. In-house radiology technician	E	E[9]	E[9]	E[9]
	b. Angiography	E	D	D	--
	c. Sonography	E	E	D	--
	d. Nuclear scanning	D	D	D	--
	e. Computerized tomography	E	E	E	--
	f. In-house CT technician	E[9]	E[9]	E[9]	--

		RTC	ATH	CTH	TRF 9.
	Rehabilitation				
	a. Rehabilitation service staffed by personnel trained in rehabilitation care and equipped properly for acute care of the critically injured patient	E	D	D	--
	b. Full in-house service or transfer protocol to an approved rehabilitation service.	E	E	E	E
10.	Clinical laboratory service (available 24 hours a day)				
	a. Standard analyses of blood, urine, and other body fluids	E	E	E	D
	b. Blood typing and cross-matching	E	E	E	D
	c. Coagulation studies	E	E	E	--
	d. Comprehensive blood bank or access to a community central blood bank and adequate storage facilities	E	E	E	D
	e. Blood gases and pH determinations	E	E	E	D
	f. Microbiology	E	E	E	--
	g. Drug screening	E	E	E	--
	h. Alcohol screening	E	E	E	--
D.	**QUALITY IMPROVEMENT**				
1.	Quality improvement programs	E	E	E	E
2.	Trauma register	E	E	E	E
3.	Special audit for all trauma deaths	E	E	E	E
4.	Morbidity and mortality review	E	E	E	E
5.	Trauma conference, multidisciplinary	E	E	E	E
6.	Medical nursing audit, utilization review, tissue review	E	E	E	E
7.	Review of prehospital trauma care	E	E	E	E
8.	Published on-call schedule must be maintained for trauma team personnel	E	E	E	E
9.	Times of and reasons for trauma related bypass must be documented and reviewed by a quality approved program	E	E	E	E
10.	Quality improvement personnel-dedicated to and specific for the trauma program	E	E	E	E

		RTC	ATH	CTH	TRFE.
OUTREACH PROGRAM					
1.	Epidemiology Research				
	a. Conduct studies in injury control	D	--	--	--
	b. Collaborate with other institutions in research	D	D	D	D
	c. Monitor progress of prevention programs	D	D	D	D
2.	Surveillance				
	a. Special ED and field collection projects	D	--	--	--
3.	Prevention				
	a. Designated prevention coordinator	E	E	E	D
	b. Outreach activities and program development	E	E	E	D
	c. Information resource	E	E	E	D
	d. Collaboration with existing national, regional and State programs	E	E	E	D
F.	**CONTINUING EDUCATION**				
1.	Formal programs in continuing education provided by hospital for:				
	a. Staff/Community Physicians	E	E	E	D
	b. Nurses	E	E	E	E
	c. Allied health personnel	E	E	E	E
	d. Prehospital personnel	E	E	E	E
G.	**TRAUMA SERVICE SUPPORT PERSONNEL**				
1.	Trauma Coordinator	E	E	E	D

1. This requirement may be met by a qualified physician who is available on-call from outside the facility. A system must be developed to assure early notification of the physician on-call so that he/she can be present at the time of arrival of the trauma patient in the Emergency Department 95% of the time. This standard must be documented and monitored by the QI process.

2. Anesthesia must be promptly available with a mechanism to ensure early notification of the on-call anesthesiologist. Local conditions must be established to determine when the anesthesiologist must be immediately available for airway emergencies and operative management. The availability of the anesthesiologist and the absence of delays in airway control or operative anesthesia must be documented and monitored by the QI process.

3. May be provided by a CRNA under physician supervision. Local conditions must be established to determine when the CRNA must be immediately available for airway emergencies and operative management. The availability of the CRNA and the

absence in delays in airway control or operative anesthesia must be documented and monitored by the QI process.

4. It is not anticipated that a physician will be available on-call to an Emergency Department in a Trauma Receiving Facility. This requirement may be met by a qualified mid-level practitioner on-call from outside the facility. A system must be developed to assure early notification of the on-call practitioner. Compliance with this criteria must be documented and monitored by the QI process.

5. The trauma surgeon on-call must be unencumbered and promptly available to respond to the trauma patient. Local criteria must be established to define conditions requiring the trauma surgeon's immediate presence. The trauma surgeon's participation in major therapeutic decisions, presence in the emergency department for major resuscitation, and presence at operative procedures is mandatory. A system must be developed to assure early notification of the on-call surgeon and compliance with this criteria and their appropriateness must be documented and monitored by the QI process.

6. The trauma surgeon on-call must be unencumbered and promptly available to respond to the trauma patient. However, this level contemplates there may be only one surgeon in the community and may not be available at all times. During these periods when the surgeon is not available, the Hospital must notify other facilities who routinely transfer/refer patients to the Community Trauma Hospital for emergency surgical services.

Local criteria must be established to define conditions requiring the trauma surgeon's immediate hospital presence. The trauma surgeon's participation in major therapeutic decisions, presence in the emergency department for major resuscitation, and presence at operative procedures is mandatory. A system must be developed to assure early notification of the on-call surgeon and compliance with this criteria and their appropriateness must be documented and monitored by the hospital's trauma QI process.

7. This requirement may be met by a technician or nurse who is capable of responding to the trauma resuscitation area, anticipate the operative needs of the patient, initiating the call process for on-call staff and preparing the operating theater for a patient. Compliance with this requirement must be documented and monitored by the QI process.

8. The trauma patient admitted to the ICU will be admitted under the care of a general surgeon. In addition to overall responsibility for patient care by the primary surgeon, there must be physician coverage for the ICU at all times. It is anticipated that this coverage will be provided by the primary surgeon but it may be a physician who is credentialed by the hospital and the director of the ICU in critical care. The physician on-call must be promptly available to respond to the trauma patient in the ICU. Local criteria must be established to define conditions requiring the trauma surgeon's immediate hospital presence. Compliance with this criteria and their appropriateness must be documented and monitored by the QI process.

9. If this requirement is fulfilled by technicians not in-house 24 hours/day, quality improvement must document and monitor that the procedure is promptly available.